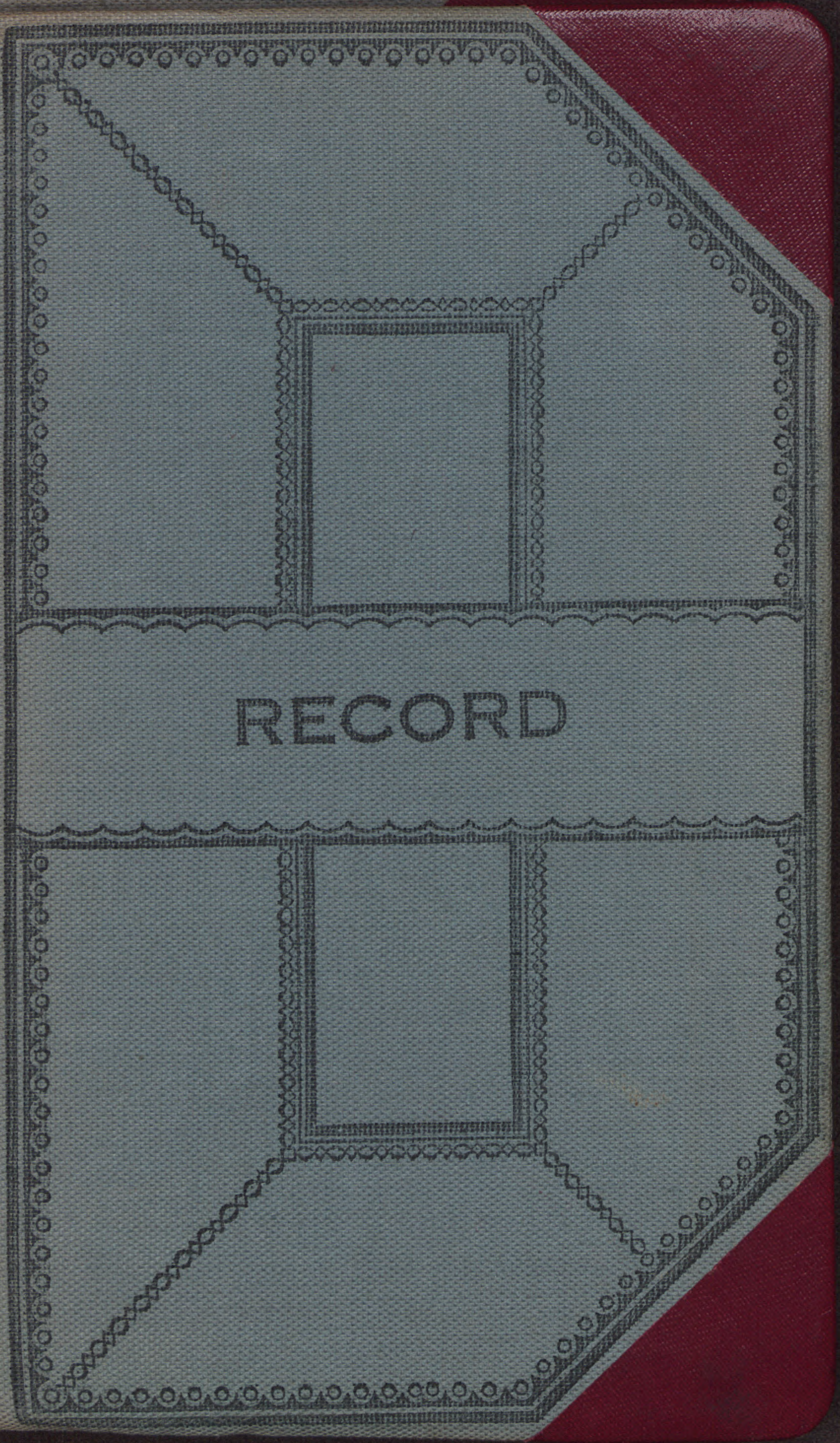

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F.R. Fosberg
Collection Book

Field and Collection Note Book

No. 45

(June 4, 1956 - June 24, 1956)

(37262 -- 37736)

RYUKYU ISLANDS

Ishigaki

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No. 45
begin with #37242
ends with #37726

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Ishigaki
Taketomi

Ishigaki

June 4 – above Inota

(40) (Photo 950-54)
Secondary scrubby forest, dense, full canopy, lianas abundant, esp. Flagellaria + Smilax. Trees mainly secondary species – Ficus, Macaranga, Mallotus, Diospyros, Camellia, Ardisia Schefflera, Trema. Undergrowth of Psychotria, Lasianthus and abundant ferns, Angiopteris, Tectaria. Polypodium, etc. especially in gulches. Arenga common.

Leeches abundant on dead sticks + leaves on ground.

(41) (Photo 950-54)
Dense forest of small trees not over 10 m. tall. Quercus, Ficus, etc.

~~[illegible]~~, Shrub layer very marked Lasianthus, Psychotria, Ardisia, Myrsine, ~~[illegible]~~ Antidesma, Sarcandra, Myrtac. various other sterile shrubs, ~~[illegible]~~ about 2 m. tall, stems average 3-5 m. apart. Trees 2-5 m. apart.

Few ferns, few lianas. Some Zingiberaceae. Almost no other ground cover. Dead leaves over bare soil general. A few seedlings.

Much logging going on here, even of trees down to 10 cm. dbh. No obvious preference of species - Styrax, ~~Lauraceae~~, Lauraceae, etc as well as Quercus, Elaeocarpus, etc. Locally there are patches of several ferns, apparently spreading by running rhizomes, also of Alpinia sp.

But even where there is a slight gully or steep slope the fern ground cover becomes very abundant. A few Asplenium nidus on tree trunks, otherwise epiphytes confined to a few crustose lichens, algae etc one small fern. But several close clinging vines, incl. Psychotria serpens, and one or two others are quite common running up into trees.

Tree trunks here quite commonly up to 3 dm. dbh., occasionally larger.

Additional trees in top layer Ardisia, Elaeocarpus, Myrsine.

Ficus not abundant on ridge tops.

1956

(4771

Deep gulch with small stream, huge boulders and some alluvium in bottom.
Trees here are 15 m. or even more tall, many kinds incl. Ficus, Cibotium,

Ferns very abundant and many kinds Angiopteris and a small tree fern-like sterile species, a big Polypodium, Thelypteris, Otyopteris, etc.

Arenga common, also a big araceous vine and what looks like a Hoya but non-lactiferous, climbing on rocks.
Mosquitoes in great numbers (Aedes)

1954 Ryukyu Is.
Inoda yama,
June 4 – 1-1.5 km. 60° ~~W. of N.~~ w of n. of
~~Inoda~~ Inoda
deep wet wooded gulch

37262 ~~Polypodium~~ Tectaria decurrens (Presl) Copel.
3 common on steep banks
~~near~~ along bottom ~~of deep gulch~~

6 63 ~~Psychotria~~ Ophiorrhiza liukiuensis Hayata
occasional in bottom of

5 64 Psychotria liukiuensis Hatusima ?
occasional in bottom of

4 65 Ficus ampelas Burm. f.
common in

on rounded wooded ridge

1 66 Ardisia quinquegona Bl.
common

2 67 Ardisia quinquegona Bl.
common

6 68 Ilex mutchagara Mak. I. mutchagara
~~[illegible]~~ one tree seen

1 69 Ardisia sieboldii Miq. ?

5 70 (fern) Lemmaphyllum microphyllum Presl
epiphytic on tree-trunks.

~~71~~ ~~[illegible]~~

1 71 Lasianthus tashiroi var. pubescens (Matsum.) Nakai
rare

ISHIGAKI ISLAND.

ISHIGAKI ISLAND.

100–150 m.

"bird's nest" habit, sterile fronds spreading and ascending, fertile ones more erect.

[illegible]

— shrub 0.7 m. tall; flowers white.

— shrub 1-1.5 m. tall, flowers whitish

65 tree 15 m. tall, 20 cm. d.b.h. somewhat buttressed.

200 m.

66 shrub 2 m. tall; fruit immature

67 — shrub 2-3 m. tall; very young fruit red.

68 — tree about 10 m. tall, cut for timber, log about 15 cm. thick; flowers white.

OK EHW

69 — shrub 1.5 m. tall. flowers pinkish white, anthers turning very dark in age, punctate when young and pinkish.

70 — vine clinging very closely to tree-trunk.

71 small shrub; veins glossy above.

1956 Ryukyu Is.

37272 Ilex goshiensis Hayata
6 one tree seen

3 73 Korthalsella opuntia (Thunb.) Merr.
parasitic on #37272

Castanopsis cuspidata (Thunb.) Schott
5 74 Quercus cuspidata Thunb.
common

5 75 Elaeocarpus japonicus S.+Z.
common (?var. iriomotensis Masam.)

Distylium racemosum S.+Z.
6 76 ~~Daphniphyllum~~?
occasional

5 77 Dryopteris varia (L.) O.Ktze.
common, especially in
small ravines and depressions, Terrestrial

5 78 ~~fern~~ Cyclosorus triphyllus (Sw.) Copel.
very common in patches,
especially on slopes and
in depressions, terrestrial.

5 79 Alpinia chinensis (Willd.) Roscoe
common

5 80 Styrax japonica
rare (?var. iriomotensis Masam.)

5 81 Randia
occasional Tarenna

---

tree about 10 m. tall,
cut for timber: inflorescences
~~[illegible]~~ appear abnormal.

OK — dark green, branchlets
flattened perpendicularly
to ~~branches~~ plane of
flattening of branches,
but basal joint of a
branchlet often terete.

— tree 10 a 12 m. tall,
cut for timber; leaves
bronze beneath,
fruit immature.

OK — tree 10 m. tall, cut for
timber, a few leaves
red; fruit immature.

76 tree 10 m., cut for timber.

78 running rhizomes
forming patches.

—
79 ~~flowers~~ rhizome horizontal,
aromatic when broken;
flowers white, lip with
2 deep pink stripes.

80 tree 8 m. tall 12 cm. dbh.
cut for timber.

81 shrub 2 m. tall,
flowers white.

1956 Ryukyu Is.

same

Syzygium buxifolium H. & A.

37282 Eugenia microphylla Abel
5 occasional

5 83 Ardisia quinquegona Bl.
common

5 84 Psychotria P. rubra Poir.?
very common, making up a large part of shrub layer,

3 85 (orchid) Stereosandra koidzumiana Ohwi (?= S. javanica (Bl.)
very local, one colony seen

5 86 Psychotria serpens L.
common, climbing in trees

5 87 (~~laurac?~~) Daphniphyllum teijsmanni (var. okinawense Hurusawa?)
occasional

5 88 ~~87~~ (~~fern~~ (~~fern~~) Hemigramma decurrens (Hook.) Copel.
~~same~~ rare in small draw

2 89 Callicarpa iriomotensis Masam.
occasional in ravines,

2 90 (~~laurac.~~) Machilus thunbergii S. & Z.
occasional

7 91 Myrsine seguinii Lév.
common

5 92 Ilex goshiensis Hayata
occasional

2 93 Antidesma
occasional

5 94 Ilex goshiensis Hayata
occasional

ISHIGAKI ISLAND.

150-175 m.

shrub 2 m. tall, flowers with white stamens.

shrub 2.5 m. tall; fruit immature

shrub 2 m. tall; flowers greenish.

det. L.A.Garay

erect, stems whitish from a fleshy tuber; flower parts purple-tipped.

OK

young vines very closely appressed to tree-trunk, growing up from ground. ramifying in upper branches of trees; flowers pale greenish.

tree 6 m. tall, fruit immature.

det. H. N. Moldenke

89 shrub 2 m. tall, fruit immature.

90 small tree, sterile; leaves glaucous beneath.

91 tree 8 m. tall; fruit immature

92 small tree; fruit immature

93 shrub 1 ~~5~~ m. tall, fruit immature.

94 small tree, fruit immature

1956 Ryukyu Is.

37295 Dendropanax
3

in deep wet wooded gulch
7 96 ~~fern~~ Bolbitis subcordata (Copel.) Ching
rare
1 97 Trichomanes Cephalomanes javanicum (Bl.) van den Bosch
local, on vertical clay bank
2 98 Asplenium unilaterale Lam.
local, on vertical clay bank
8 99 Randia? R. canthioides Champ.
occasional

June 5 - south of base
of Maishi Take

(43) Chert outcrop in semi
cultivated area. Has
been burned over, not
too long ago.
Between the chert boulders
are areas of grass - partly
Imperata, partly Paspalum.
Andropogon, etc.
On the rocks is a
scrubby woody vegetation
of Ficus, Toddalia, Mallotus,
Evodia(?), Melia, Psidium,
Boehmeria, Pongamia?,
Arenga, and
one or two other shrubs,
clumps of Miscanthus,
and Polypodium
scolopendria and
Nephrolepis., Dianella

---

96 fertile fronds erect

97 dark green.

99 small tree or large shrub,
fruit immature.

Tangled in this are
Vitis, Ampelopsis, Smilax,
Bauhinia, Alyxia?
Pueraria, Lygodium,
a thorny trifoliate vine,
and Hoya.
Some Rubus, Cyperus,
Thelypteris, Lilium
longiflorum, Pittosporum,
Lauraceae?, Rosa,
and Agave americana.
Murraya, Premna, Carmona,
Oxalis, Emilia,
Leucas, Setaria, (melast.?)
Gynura, Conyza, Paspalum
Wahlenbergia, Andropogon,
Artemisia.

~~Paddy fields abandoned
or fallow at [illegible]
of [illegible].~~

1956

June 5 - Chert hills above Waterworks.

(44) Unburned chert outcrops. Few species noted here that were not on the burned hills - Polygala, Viola, Polypodium thunbergii, Psychotria serpens, Vernonia cinerea, Nephrolepis exaltata, but everything is much more luxuriant. Less weeds, grass thicker around base.

Abandoned or fallow paddy fields nearby are covered by a pure stand of Panicum.

Well up the slope Dendropanax, then Quercus, come in. Podocarpus general but only saplings.

1956 Ryukyu Is.

June 5 - just south of base of ~~Maishi~~ Take.

small hill of chert, with bare rocks and bushy vegetation.

37300 Polygala japonica Houtt.
1 in rock crevice

1 01 Viola
at base of rock face

3 02 Polypodium Thunbergianum
in crevices on rock face

same - roadside

2 03 Echinochloa hispidula (Retz.) Honda det. A. Chase
in thick grass

5 04 Vitex trifolia var. heterophylla (Mak.) H. Moldenke
on steep bank

7 05 Ficus erecta Thunb.
on steep bank

June 5 - 1 km. s.s.e. ~~Maishi~~ Take Maishi Take

roadside thicket

5 06 Ficus septica Burm. f.
common

5 07 Acacia confusa Merr.
abundant, probably planted

along shallow ravine

5 08 Cerbera manghas L.
~~[illegible]~~ common

80 m.

Pleopeltis thunbergiana Kaulf.

04 shrub 1.5 m. tall, flowers violet.

05 shrub 2.5 m. tall, ripe figs red, mostly immature.

40 m.

06 low bushy tree 6 m. tall, figs immature.

OK 07 low tree 3 m. tall (others to 6 m.), trunk crooked, flowers yellow, fruit immature.

OK 08 small tree, flowers white, center red, ~~to~~ calyx palegreen, tube slightly dilated only near top.

1956 Ryukyu Is.

same - small chert outcrop with some soil.

37309 5 Conyza. Vernonia cinerea (L.) Less.
common on soil

5 10 Emilia sonchifolia (L.) DC.
common on soil

5 5 11 Cyperus distans L.f. OK ? H. Kern
common on soil

12 Ficus superba var. japonica Miq.
very common

1 13 (grass) Botriochloa glabra (Roxb.) A. Camus det. A. Chase
rare

6 14 Ampelopsis brevipedunculata (var. — maximowiczii (Regel) Rehder?)
very common, climbing on rocks and bushes

5 15 Mallotus japonicus M.-A.
common on rocks

3 16 Nephrolepis biserrata (Sw.) Schott
common on rocks

5 17 Polypodium scolopendria Burm. f.
common on rocks Microsorium scolopendria (Burm. f.) Copel.

3 18 Polypodium scolopendria Burm. f. 〃
common around base of rocks

5 19 ~~Evodia~~? Fagara nitida Roxb. (= Xanthoxylum nitidum DC.)
common clambering over rocks

2 20 Hoya carnosa (L.) R. Br. OK
common, climbing on rocks.

---

45 m.

erect

10 base of stem purplish. flowers purple, little exceeding involucre.

11 erect culms scattered, solitary.

12 shrub 2 m. tall, mostly sterile at this season.

13 erect, one fertile culm, several tillers.

14 vine, flowers greenish, petals very caducous, fruit blue when ripe, mostly immature.

15 shrub 1-1.5 m. tall, leaves green beneath except when very young

16 fronds plane, leathery, pendent

17 probably same as #37318 but dwarfed by unfavorable habitat.

18 fronds erect

19 scrambling shrub, strong odor when broken.

20 prostrate vine, leaves very fleshy, flowers white with red center, waxy-fleshy.

1956 Ryukyu Is.

37321 (Apoc.) Trachelospermum asiaticum Nakai !
common on rocks

3 22 Raphiolepis liukiuensis (Koidz.) Nakai
common on rocks

5 23 Bauhinia japonica Maxim.
local on rocks

same - weedy cultivated
sweet-potato patch.

1 24 Euphorbia hirta L.
occasional

5 25 Setaria verticillata (L.) Beauv.
rare

3 26 Daucus carota L.
occasional

2 27 Digitaria ~~chinensis~~
occasional D. violascens Link

3 28 ~~Mentha~~ Orthodon scaber (Thunb.) H.-M. ?
occasional

5 29 Ranunculus sieboldii Miq.
common

5 30 Digitaria ~~pectinata?~~
common D. sanguinalis (L.) Scop.
[illegible]

---

scandent or semi-scandent
shrub, lactiferous, mostly
sterile

erect shrub 1-1.5 m.
tall, fruit immature.

scandent shrub,
flowers pale yellow.

40 m.

OK purplish,

det. A. Chase spreading, caespitose

OK EHW erect, flowers white

culms spreading

det. A. Chase

fragrant when
broken; flowers pale lavender.

stoloniferous; petals yellow

det. A. Chase culms spreading,
rooting at nodes,
scapes somewhat ascending

1956 . Ryukyu Is.

June 6 mts. 1-2 km. s.w. ~~E~~. of Kabira

(nos. 45-62 on photo 950-65)
Lower slopes mixed small pine and various secondary shrubs and
(45) small trees. In more open places Miscanthus is common but not very dense. Much Pteridium. Elephantopus mollis.

Pines become thicker,
(46) especially saplings, upward. When sharp ridge is reached, of granitic
(47) boulders, the n.w. side is covered by a scrub forest 3-4 m tall of slender trees of various kinds.
On ridge itself the same, with some
much Ficus, cycads, pine, Pandanus.
On other side, pines.

Ridge with tangled
(48) low vegetation - pines Ficus, etc. difficult to traverse even constantly using machete - Much Lygodium. some Miscanthus

Small yellow jacket nest. The insects do not seem to be bothersome until the tree the nest is on is touched. Then sting viciously.
(hadzu Y)(hachi J)
Usually 2-3 wasps on nest (3 cm. diam.)
Mosquitoes present on ridge, rather aggressive. A small black species. also an Aedes. Possibly breeds in Pandanus axils.

Most common tree in broadleaf scrub forest is pinnate leafed one with 3 follicles.
Stinging caterpillar "yamagi" said to like this tree.

Upward on n.w. slope,
49 scrub forest gets a bit taller, perhaps ~~3-4~~ 5 m. canopy dense. Shrub layer fairly well developed, almost nothing on ground, a few ferns + sedges + seedlings.
Garcinia spicata near nw.
Can be walked thru with little use of machete in places.

"Yamagi" seen on Cinnamomum rather surrounds twig, is brown, 2 rows of black and yellow specks on back, sparse short black bristles, longer stiff bristles pointing downward on legs, seeming to help cling to twig.

On very rocky ground stature of scrub is lower,
50 Eurya, Eugenia, other coriaceous lfd. plants more prominent.

[illegible] Near top + side ridges stature becomes lower, scrub thicker, 2-4 m. tall. trunks 2-5 cm. thick.

51 Taller + larger trees in shallow draws.

200 m. On first main top the vegetation is a dense
52 scrub about 4 m. tall. Many species, including Myrsine (a Ternstroemia) Ficus, Dendropanax,

Cinnamomum, Eurya, Eugenia, Elaeagnus, f.

On broad flat ridge
53 west from this is a forest 5-8 m. tall, trees up to 20 (-rarely 30) cm., mostly up to 10 cm. Full canopy, sparse shrub layer, many species of trees + shrubs. Garcinia spicata rare here. Trees 1-1.5 m. apart. Some lianes — Flagellaria, Smilax, etc. Ferns fairly abundant on ground.
In places the forest is largely Ficus, Elaeocarpus (2 spp.), several Lauraceae, Camellia, in other places largely Quercus cuspidata.

At about 200 m. or a little higher Pleioblastus comes in, at first mixed with forest,
54 ~~etc~~ then forming almost pure brakes.
A few old pines scattered around edges and on ridges in these brakes.
Canes finger size or smaller, orange to greenish.

Clump forming but also with underground horizontal rhizomes, clumps coming from side branches from these, single culms also. Blade of culm sheaths appressed and divergent on same culm.

These brakes are about 4 m. tall. They occur in patches on the n. sides of the high crests, but the highest peak has none, but is wooded all over. On high crest
(55) ~~56~~ the brakes are lower in stature, 1.5 - 2 m.

(56) In the canyon behind Kabira are patches of bamboo down to 150 m or even lower. No pattern to distribution except that they are on ridges separated by wooded ravines. All have a few spreading umbrella-shaped pines.

Some low scrub in with bamboo near crests.

---

(57) Main ridge to west seems to have better forest, but trees very gnarled and spreading.

57 In saddles the forest is about 10 m. high, trees up to 15-20 cm. dbh. many of them clusters of stump sprouts. Canopy full, but not dense, shrub layer well developed. Main canopy largely oak, Ilex forms a loose second story. Little on ground - a few ferns, terrestrial orchids, sedges, Ligularia etc.

(58) In main draw leading up to west ridge and on ridge itself, mentioned
(59) above, trees to 15 m. and 3 dm. dbh. Many ferns on ground. Dense canopy. Leeches in bottom of ravine. Well developed shrub layer. Many species of trees, esp. Quercus + Elaeocarpus. One tree seen 5-6 dm. dbh. 15 - 18 m. tall.

~~Upper part of~~ at head of small
~~South~~ ridge of valley
60 has thick forest
about 6–8 m. tall.
Many spp. incl.
Dendropanax, Syzygium,
etc. Tangled mats,
Freycinetia, Smilax,
Elaeagnus, Flagellaria, etc.

1. Slope of ~~valley~~ ridge not
far from valley mouth — dense
61 forest about 8–10 m.
high, trees mostly
small, 10–15 cm. dbh.
occasional large
Ficus with compound
trunk.
Lianas, incl. Entada,
abundant. Many
ferns. Shrub layer
very sparse.
Some Alocasia.

Near the bottom
62 of the valley Ficus
becomes abundant.
Maesa and Alocasia
common. Secondary
species, as Mallotus,
become dominant.
Vines, esp. Flagellaria
become more abundant.

1956 ~~Ro~~ Ryukyu Is.

June 6 - about 1 km. s.w. of Kabira
in steep trail in semi-open vegetation

37331 Mitrasacme pygmaea R. Br.
2 very local

37331 a Digitaria pruriens (Trin.) Buse
in scrub forest on steep slope

2 32 Citrus depressa Hayata ?
wild

Ligularia tussilaginea (Burm. f.) Makino det. Walker 1974
1 33 Farfugium tussilaginea
common ~~F. japonicum (L.f.) Kitam.~~

2 34 Cinnamomum?
common C. japonicum Sieb. ex Nees

ridge east of ~~[illegible]~~ Mae Take
June 6 - 1.5-2 km. s.w. of Kabira
on high wooded ridge

1 35 Ardisia crenata Sims
occasional

2 36 ~~(Laur.)~~ Machilus thunbergii S. & Z.
occasional ~~[illegible]~~

5 37 Elaeocarpus japonicus S. & Z.
common ~~[illegible]~~

5 38 Ficus erecta Thunb.
~~common~~ occasional

5 39 Elaeocarpus sylvestris ~~(Lour.)~~ var. ellipticus (Thunb.) Hara
common

1 40 Pleioblastus linearis (Hackel) Nakai
locally abundant on high crests and on patches on north slopes.

---

40 m.
31 flowers white

det. A. Chase

± 100 m. 32 slender ~~shrub~~ small tree, 3-4 m. tall; fruit very immature.

125 m. 33 sterile "yama-gobo" (?)

34 sterile shrub, host for brown "yamagi" or stinging caterpillar. "shiro tabu"

200 m.
35 small slender shrub 0.8 m. tall; fruit immature.

36 small tree, sterile. "aka tabu"; bark used for "Okinawa incense".

ok 37 tree 5 m. tall; fruit immature.

38 small slender tree 4 m. tall.

39 tree 8 m. tall.

det. F. A. McClure (provisionally)

40 forming dense brakes 2-4 m. tall, canes greenish to orange, in clumps or solitary, clumps and solitary canes from branches at top of bottom of running rhizome;

culm sheath blade apparently * divergent on same cane.

1956 Ryukyu Is.

37341 Adiantum flabellulatum L.
2 common, terrestrial
2 42 ~~Adiantum~~ Lindsaea commixta Tagawa
occasional, terrestrial
7 43 ~~rub~~ Tricalysia dubia (Lindl.) Ohwi
occasional
44 Dendropanax
common

petioles black

petioles green

tree 8 m. tall (others seen taller)
fruit immature, seeds in a cell.
tree 8 m. tall, flowers
green.

June 7 – above Yoshihara
(nos. on Photo 950-118)

(63) Forest in lower part of canyon above water works of Ficus, Mallotus, Ardisia, Diplospora, Cyathea, Quercus, Wendlandia, Schefflera,

tangled undergrowth of Arenga, large ferns, dioscoreous vines Caesalpinia, shrubs, etc.

(64) At about 100 m. on the east wall of the gulch Quercus becomes dominant forming a loose forest 10-12 m or so tall with thin undergrowth. Cyathea, Elaeocarpus, Ardisia, etc. also common. Terrestrial ferns, Blechnum, etc. common. On some gentler slopes a complete understory of the diminutive tree fern. trunk 2 m. or less, fronds to 2 m. more. Sections of trunk used as bases for house plants.

(65) On a ridge coming down to west of this gulch Quercus is dominant in a drier type of forest 10-12 m. tall. A distinct second story 5-8 m. tall formed of Ardisia, Diplospora, Eugenia, etc. Shrub layer of Psychotria, Lasianthus, Antidesma, small Cyathea, Eugenia, Angiopteris etc.

Ground cover sparse, of ferns, seedlings, Alpinia, broad leafed grass, etc.

Some Smilax but lianes not prominent.

(66) Upward forest becomes more diversified. Freycinetia common. Some epiphytic Asplenium nidus. "Sadamushiru" or "Sawamushiru" young fronds eaten, cooked, at time incense is burned. Cooked fronds have an odor much appreciated by older men & women. Not eaten much now.

On level ridges at
higher altitudes the
(67) trees reach 15 m. tall
and 5 dm. dbh. Mostly
3-4 dm. or smaller.
Quercus most abundant
but many others.
thick shrub layer
about 2 m. Psychotria
antidesma, Schefflera,
etc. a few small bunches
of Pleioblastus.
Near summit stature
of trees becomes lower
(68) ferns both terrestrial
and epiphytic become
more abundant.
Bamboo becomes more
abundant. Tree trunks 2-3 dm. dbh.
At summit is a patch
of bamboo with only
(69) a few scattered stunted
trees. The patch is on
the north side. Oaks
and small lauraceae
are most common trees
around summit.
Bamboo is about 4 m. tall.
Next mountain eastward
is much higher, and
(70) has a very large
patch of bamboo, with
low forest in shallow
ravines.

(69) The bamboo here
seems identical in
every respect with
that on Kabira Mts.

1956 Ryukyu Is.

June 7 - mountain ridge above Yoshihara Village

in thick wet woods near summit

37345 Polypodium thunbergianum
3 occasional, epiphytic well up on tree trunks.

5 46 ~~Elaphoglossum~~
large colony on shaded rocks
≡ doederleinii Engl.

6 47 ~~Neolitsea~~ Cinnamomum
common around edges of bamboo brake

1 48 Raphiolepis ? R. liukiuensis (Koidz.) Nakai
common in edges of bamboo brake

2 49 Podocarpus macrophyllus (Thunb.) D. Don
occasional in understory,
~~(not forming a~~

6 50 Neolitsea N. [illegible] det. C.K. Allen sericea (Bl.) Koidz. ?
occasional in canopy layer

6 51 Ardisia quinquegona Bl.
common

6 52 Ilex goshiensis Hayata
occasional

6 53 ~~Diplospora~~ Randia canthioides Champ.
common

5 54 Randia
occasional

5 55 Euonymus lutchuensis T. Ito
rare

6 56 Antidesma japonica S. & Z.
common in undergrowth

5 57 Scleria terrestris (L.) Fawcett
occasional

400 m

Pleopeltis thunbergiana Kaulf.

Cheiropleuria bicuspis (Bl.) Presl

46 sterile fronds mostly ~~dis~~ curved downward.

47 small tree, 5 m. tall, ends of branches bunchy, compact.

48 small tree 4 m. tall; fruit immature.

49 sapling 2 m. tall, sterile (no mature trees seen)

50 tree 10 m. tall; fruit immature.

51 small tree very young fruits pinkish.

52 small tree; fruit immature.

53 tree 8 m. tall; fruit immature.

54 small tree; bud only.

55 small shrub, stems green.

56 small shrub, fruit immature.

57 caespitose

1956 Ryukyu Is.

same—? high wooded ridge 350 m.

5 37358 ~~Styrax~~ Adinandra yaeyamensis Ohwi, [illegible]
~~[illegible]~~ rare

2 59 ~~Vaccinium~~? Camellia lutchuensis T. Ito
rare

3 60 ~~Polypodium~~ Prosaptia kanashiroi (Hayata) Nakai
occasional on mossy boulders

6 61 ~~Cinnamomum?~~
occasional Styrax japonica S. & Z. (?) — var. kotoensis (Hayata) Masam. & Suzuki)

same - wooded ridge 200-300 m.

3 62 Lasianthus? L. tashiroi var. pubescens (Matsum.) Nakai
rare

2 63 Ardisia quinquegona Bl.
common

4 64 Lasianthus cyanocarpus Jack.
occasional

5 65 Cinnamomum doederleinii Engl.
rare

6 66 Pteris dispar Kunze? P. semipennata var. dispar (Kunze) Baker
common locally in
disturbed part of forest

4 67 ~~Asplenium~~ Athyrium lanceum (Thunb.) Milde ~~Wagner, ined.~~
common locally, terrestrial

5 68 Tectaria variolosa (Wall.) Copel.
very common, terrestrial

~~same - small wooded valley~~

5 69 Croton cumingii M.-A.
very local

---

tree 7 m. tall, leaves
somewhat glaucous beneath.
— shrub 2.5 m. tall, sterile.

tree 8 m. tall; fruit immature

63 shrub, fruit pink.

64 shrub

65 small tree; leaves
glaucous beneath

69 shrub 1.5 m. tall

1956 Ryukyu Is.

same - small wet wooded valley

37370 Cyathea
2 abundant, forming a large part of understory
~~37370A~~ Gymnosphaera podophylla (Hook.) Copel.

same — tangled disturbed forest on lower slopes in valley mouth

37371 Capsicum annuum L.
3 rare
2 72 Elaeagnus
common

1 73 Polygonum chinense L.?
common

6 74 Turpinia ternata Nakai
common
2 75 ~~Psychotria~~ Ophiorhiza liukiuensis
common Ophiorhiza
5 76 Costus?
very local

same - wet valley bottom
4 77 Pleio~~stachys~~ blastus bambusoides S. & Z. vel aff.
occasional

---

150 m. trunk 1.5 m. tall, leaves ascending. (2 leaves represented, one with tip from another from same plant).

80-100 m.

*K 71 tangled herb, fruits red, not very hot.
72 scandent shrub, sterile; fruits said to be eaten. "subira"
73 scandent; succulent young stems slightly acid, peeled and eaten "sume"
74 tree 6 m. tall, fruit immature.
Hayata 75 erect, 0.5 m. tall; flowers white.
76 herb 1 m. tall, leaves conspicuously spiralled, flowers white.

80 m.
det F A McClure (presumably juvenile) 77 rhizomes deeply buried, horizontal, branches arising from the bottom of rhizome at intervals of 0.5 m. or more.

1956 Ryukyu Is.

June 8 - Reef on east coast north of Todorahi + Gaura perhaps 1000 m. wide

~~[illegible]~~ reef margin not at all raised. gently sloping off & a margin cut by surge channels, a few of which penetrate 50 m. or so, through the zone where a number of 1 species of flat, short-branched corals are common. Seems to be basically a growth surface with a smooth Porolithon in area of numerous surge channels but not ~~so~~ very actively growing.

The zone of few surge channels shows abrasion and some flat corals, also abundant Turbinaria on back part, making an almost continuous dark drab green band about 20 m wide.

Then typical rather minutely rough reef flat for 300 m. or so, with thin algal felt.

The growth surface on the outer 50 m. is evidently a veneer on an old cut surface ~~a few~~ 2-3 dm. below the reef flat level. A few remnants of the old level remain, badly eaten and undercut. No obvious agent ~~fo~~ of abrasion but much abrasion evident on all bumps and points on algal surface and on reef flat remnants. A few loose rocks in deep tide pools, none lying on surface.

The 300 m. of reef flat is very slightly rolling in topography and slopes very slightly toward back and front from a central high area. The total relief is probably not 2-3 dm. Covered by a rather good cover of Liagora.

Inner half has rounded cobbles strewn sparsely over it.

The 400 m. next inward is lower and has a very irregular surface with a relief of perhaps ~~[illegible]~~ 1 m. some patches being deep and sand bottomed others shallow and rough and covered

1956 Ryukyu Is.

by a large brown alga. This area has water flowing strongly northward at low tide, as there is no escape seaward through the reef ridge.

In shallower sand bottom pools is a sod of Thalassia, Halophila and Cymodocea.

The 300 m. between here and beach is shallower not so rough but not smooth, with many large boulders covered by an algal felt with sand.

Bordered just below beach by a typical erosion ramp.

US Nat. Herb.

37378 Turbinaria
dominant on a strip just back of reef margin

" 79 Sargassum
dominant on shallower ~~spots~~ areas in central part of reef.

" 80
abundant on inner part of outer reef flat.

0 m.

mustard brown, soft.

1956 Ryukyu Is.

37381 Halimeda stuposa
2
common on outer part
of reef at low tide level.

2 82 Liagora
dominant on outer reef flat

83 Halophila ovalis (R.Br.) Hook.f.
abundant locally
in sandy areas at
about mean low tide
level on outer edge of
inner reef flat.

3 84 ~~Cymodocea~~ ~~Diplanthera~~ Halodule uninervis (Forsk) ~~Williams~~ aschers. det. C. den Hartog 1969
abundant locally in
sandy areas at about
mean low tide level
on outer edge of inner
reef flat.

4 85 Thalassia hemprichii (Ehrenb.) Aschers in Petermann det. C. den Hartog 1969
abundant in sandy
~~fu~~ areas at and somewhat
below mean low tide
level on middle part
and inner part of reef.

June 8 - mouth of Miyara-Gawa 0 m.
mangrove swamp

5 86 Bruguiera conjugata (L.) Merr.
common

3 87 Kandelia candel (L.) Merr.
rare

6 88 Rhizophora mucronata
abundant

erect from stalk
buried in sand.

rhizomes buried in sand
leaves partly protruding

rhizomes buried in sand.

rhizomes deeply buried
in sand.

small tree, 3 m. tall,
calyx red, radicle
pendent, hexagonal
in cross section.

shrub 2 m. tall, buds
whitish.

small trees, 3-4 m. tall,
with stilt roots

1956 Ryukyu Is.

June 9 - above Kainan on Miyara

(71) (Photo 950-10) Lowland thickets of Ficus, Macaranga, Premna, Boehmeria, Mallotus, Diospyros, Bainnglaria

tangled with Caesalpinia, Canavalia, Flagellaria, Ampelopsis, Smilax, Pongamia(?), Cibotium, Glochidion, undergrowth of Alocasia Alpinia speciosa ~~[illegible]~~ Psychotria, Evodia, Maesa

trifoliate tree Diospyros

Paspalum conjugatum abundant along trails.

A large Ficus, 15-18 m. tall, covered by epiphytes and aroids suggests what the forest may have been

(72) Farther along the secondary thicket becomes more scrubby and has more native forest species in its composition at about 100 m. Quercus ~~[illegible]~~ and Fraxinus appear, also Antidesma, etc.

(73) Old fields at about 100-120 m. being invaded by Melia, Xanthoxylum, Macaranga, Mallotus, etc.

A small colony of Ipomoea pes-caprae

(74) Lower slopes covered by a dense low wood of many species, mostly those associated with Quercus, but a few secondary ones. Trees mostly 5-8 m tall, less than 10 cm. dbh. Many are clusters of stump sprouts.

75 Along the stream valley the trees are taller, about 10 m., considerable diversity of species, but few trees over 10-12 cm. dbh. Shrub layer rather marked, but possible to walk without much cutting. Rather few lianes

1956 Ryukyu Is.

Up the valley the forest becomes taller, more and more big trees, much wetter, more ferns and much Freycinetia. Epiphytes more common here. Small species of tree fern common.

(76) (photo ~~949~~ 950-11)

300 m? 350

Much lumbering ~~[illegible]~~ is being done in this area.

(77) Upward the forest becomes wetter, more luxuriant, but of lower stature. epiphytes very common. This would almost be regarded as rain forest. On ridge stature is still lower.

(78) On a broad horizontal ridge ~~to~~ just below summit is ~~thick~~ forest 10 m. or so tall Here are mud flats, locally, with no groundcover and little or no shrub layer.

Where there is no mud, shrub layer, and ferns very well developed.

---

soil on summit Omotosan

pH 6 surface soil - brown

pH 4.5-5 3-10" down strong brown

pH 4-4.5 10"-30" " " "

summit covered by extensive brake of Pleioblastus - about 2 m tall on exposed summit, taller lower down. To 4 m.

A few shrubs scattered in the bamboo - Cinnamomum, Viburnum

ground cover very well developed in bamboo of Oplismenus, ferns, etc. Ligularia

going down s.w. ridge the same sequence is repeated in reverse. The forest is quite wet for a good distance down. Then a ridge that is drier, the forest largely Quercus but small size. ferns few in number, undergrowth not luxuriant.

Then in valley bottoms above Shira Mäzu there is tangled lowland forest.

1956 Ryukyu Is.

June 9 - Shira Mizu, tributary ~~to~~ upper part of north branch of Nagara-Gawa.

37389 Mallotus japonicus M.-A.
6 in thicket in ~~steep~~ deep river ravine

4 90 Eugenia jambos L. [illegible]
~~June 9~~ bottom of stream valley

June 9 - southwest slopes of Omoto-san, above Shira-Mizu

6 91 fern Tapeinidium pinnatum (Cav.) C. Chr.
on earth banks along trail in woods

2 92 Asarum
common in wet woods

6 93 Camellia lutchuensis T. Ito
common in wet woods

3 (94) Damnacanthus
occasional in wet woods

June 9 - plateau just south of summit of Omoto-~~san~~ Dake
in wet low forest

6 95 Ligustrum liukiuense Koidz.!
rare.

5 96 Scleria terrestris (L.) Fassett
common

30 m. small tree or large shrub.

50 m. spreading tree, fruit pinkish yellow when mature, edible, with strong flavor.

250 ~~300~~ m

450 m sterile; rhizome with strong odor, between licorice and Vicks Vapo-rub.

475 m small tree 3 m. tall.

500 m. shrub to 1 m. tall leaves glossy; fruit immature.

500 m.

small tree 4 m. tall; flowers white, fragrant. ~~[illegible]~~ several stems from base.

1956 Ryukyu Is.

37397 Psychotria
5 common in undergrowth

5 98 Polypodium
occasional, climbing
tree trunks

5 99 (~~[illegible]~~) Skimmia japonica Thunb. (? = S. Lutchuensis Nakai)
occasional

37400 ~~Eurya~~ ? Eurya sakishimensis Hatusima
2 ~~Camellia lutchuensis Ito~~
rare

3 01 (fungus)
rare

4 02 Mussaenda
occasional

June 9 - summit area
of Omoto - ~~san~~ Dake
in ~~[illegible]~~ dense brake of dwarf
bamboo (Pleioblastus)

7 03 ~~Asplenium~~ Athyrium fraxinifolium (Mak.) Milde
very common under
bamboo (also seen in
forest below)

2 04 Pleioblastus Chino (Fr. & Sav.) Makino
dominant on summit

Ilex faabergiana Hu
5 05 Ilex mutchagara Makino
occasional in dense ^ cane - brake - summit of Omoto - Dake Jun 9, 1956

2 06 Schefflera odorata ?
in "fox-hole" on summit ~~Omoto~~ - ~~Dake~~
Stauntonia hexaphylla (Thunb.) Decaisne

shrub 2 m. tall,
flowers pale green.
Microsorium hancockii (Baker) Ching ?

small tree, bark and leaves
highly aromatic; fruit immature

400 small tree, sterile,
(attacked by fungus #37401)

01 covering dead portions
of Eurya sp. tree with
a silvery white coating,
giving an eery impression
in wet shady forest.

scandent shrub,
calyx lobe white, corolla
yellow.

520 m.

→ Diplazium donianum (Mett.) Tard.-Bl.
det C.V. Morton

det. H. [illegible]

04 densely crowded,
forming a brake 2-4 m. tall,
canes orange color when
mature.

06 stout scandent shrub or vine,
leaves conspicuously pellucid
reticulate beneath, aromatic.

1956 Ryukyu Is.

June 9 - south ridges of
Omoto-~~san~~ Dake
in thick low wet forest

3 37407 (~~Lau.~~) Actinodaphne longifolia (Bl.) Nakai
occasional

3 08 Hydrangea scandens ssp. chinensis (Maxim.) McCl.
occasional

5 09 ~~Lindsaya~~ Lindsaea macraeana (H. & A.) Copel.
occasional, climbing
on tree-trunks.

3 10 (~~Laur.?~~) Styrax japonica S. & Z.
occasional

June 9 - Gulches at
northeast base of Omoto-~~san~~ Dake

11 Maesa tenera Mez
common in second growth

June 9 - valley of Miyara-
gawa, 1 mile north of
Kainan Village

10 12 Fraxinus griffithii C. B. Clarke
in second growth thickets

2 13 Vincetoxicum Cynanchum liukiuense Warb.
climbing in second-
growth thickets

5 14 Ficus ampelas Burm. f.
in second-growth thicket

15 Bridelia ovata Decaisne
in second-growth thicket

475 m small tree 6 m. tall,
in bud only; leaves
glaucous beneath.

475 m. small tree 5 m. tall,
flowers green, sterile
flowers greenish white

475 m.

475 m.

200 m. shrub 1 m. tall, showing
a common abnormality.

100 m

tree 8 m. tall

13 vine twining in trees,
petals bronze with
greenish centers,
corona white.

14 small tree

15 small tree, leaves
glaucous beneath,
fruit immature.

1956 Ryukyu Is.

June 10 -

(79) small mangrove swamp

(Photo 945-24)

low scrubby growth with considerable open ~~[illegible]~~ sandy, gravelly mud.

Excoecaria and Rhizophora mucronata most abundant, with considerable Bruguiera conjugata, some Lumnitzera racemosa, and with Clerodendrum inerme getting down into swamp. Also Vitex (prostrate form).

Some open areas covered by Paspalum vaginatum, others, less low and wet by Panicum ambiguum.

General height of ~~the next~~ or woody plants here is 2-3 m., with some Excoecaria reaching 4 m.

(80) (Photo 945-24).

Second small swamp toward Nagura, at mouth of small stream, has principally Bruguiera, with some Rhizophora especially toward the sea.

Borings yield a dark gray shell and coral marl, rather clayey in places, elsewhere gravelly.

General height of woody plants here about 2 m.

1956 Ryukyu Is.

June 10 - mouth of Nagura-gawa

(81) broad open flats with no vegetation except here and there areas of sea-grass.
(Photo 945-24)

Areas of low mangrove mostly Rhizophora, some Bruguiera, a very little Avicennia and Lumnitzera, also areas of Paspalum vaginatum. None of this more than 2-3 m. tall.

Exposed chert or schist rocks bear Fimbristylis, Hedyotis, etc.

(82) Along river bank a mixed forest of Hibiscus, Pongamia, Ficus, Pandanus, Heritiera, Raphiolepis, Pouteria, Excoecaria, Premna, etc. festooned with Caesalpinia, Derris, Dalbergia vines.

This is dense, tangled and penetrated with difficulty. It merges into the mangrove swamp in places.

(83) Back of this is an open, grassy area, varied with thickets. Here the grass is principally Ischaemum muticum, with some Imperata.

1956 Ryukyu Is.

June 10 - 3~~4~~ km. n. w. of
Nagura, along coast s. ~~e~~ of

37416 Paspalum vaginatum Swartz
6 dominant in many
wet, saline places, usually
submerged by high tide.

June 10 - Shira Hama, at mouth of small
stream ~~[illegible]~~ 2.7 km. n. w. of
Nagura
in mangrove swamp on muddy
shell and coral marl.

6 17 Bruguiera conjugata (L.) Merr.
commonest species

~~June 10 - mouth of~~
~~Nagura gawa.~~

8 18 Lumnitzera racemosa (Sack) Voigt
occasional

June 10 - mouth of
Nagura + Gawa

7 19 Ischaemum muticum L.
abundant in low
open ground back of
river bank thickets.

2 20 Fimbristylis cymosa R.Br.
on chert boulder in river-mouth
mud-flat

~~[illegible]~~ Kera saki

1 m. culms ascending, forming
a loose sod.

0 m.

shrub 2 m. tall, with
closely crowded prop
roots and small
"knees" or loops of root
protruding above the mud;
flowers with calyx
red, petals dull orange.

shrub 1.5 m. tall; leaves
fleshy-coriaceous;
flowers white.

1-2 m.

rhizome prostrate, on
surface of ground,
fruiting culms erect.

caespitose

1956 Ryukyu Is.

37421 Caesalpinia nuga (Willd.) Ait
4 common in riverbank ~~[illegible]~~
thickets

Zostera japonica Aschers. & Gr. det. C. den Hartog 1969
3 22 ~~Cymodocea rotundata Hempr. & Schweinf~~
forming a thin sod on sandy
mud-flat exposed at very low tides

5 23 Pouteria obovata (R.Br.) Baehni
occasional in river-bank
thicket.

5 24 Catharanthus roseus (L.) G. Don
large colony in open area
back of riverbank thicket

5 25 Avicennia ~~officinalis~~ A. marina (Forsk.) Vierh
local in edge of
mangrove swamp

3 26 Raphiolepis liukiuensis (Koidz.) Nakai
occasional in
river-bank thicket.

3 27 Ficus superba var. japonica Miq
common in riverbank
thicket

woody climber.

0 m.

1 m. 23 shrub 2.5 m. tall.

2 m. OK 24 flowers magenta.

0 m 25 shrub to 2 m. tall,
flowers orange, on
spreading lower branches.

1 m. 26 ~~[illegible]~~ shrub 2.5 m.
tall.

27 small tree, almost
deciduous, at this
season, fruits pink to
purplish.

June 11 – Miyara River
3 km. n.w. of Miyara

Thickets and woods
(84) along river on banks
(photo 940-26) and limestone bluffs.
Hibiscus tiliaceus and
several species of Ficus,
(trifoliate Melia, Pterocarpus, Cordia
secondary a tall bamboo, Ochrosia,
tree.) Melanolepis, and a number
of other trees, tangled
and festooned with
Caesalpinia 2 spp., Clematis,
Ipomoea, Ampelopsis,
Canavalia, Clerodendrum
inerme, Wedelia biflora
and other vines and scrambling
shrubs. Flagellaria, Smilax, ~~Diosc~~ –
Dioscorea.
The ground, in many
open places, is grass
covered, especially Oplismenus,
in more shaded
places, fern covered, by
Thelypteris.

June 11 – 3 km. n.n.w. of
Miyara

(85) Outcrop of volcanic rock
covered by grove of small
pines, periphery by
Imperata. Under pines
growth is sparse, with
Lilium, Aneilema, Vernonia,
Elephantopus, Polygonum,
Commelina, Oplismenus,
Desmodium, Osbeckia,
Clematis, Viola, Oxalis,
several other weeds, most
of them quite underdeveloped.
Ground mostly covered by
pine needles.

June 11 – 0.7 km. e. of
4 km. n. of Miyara

(86) Outcrop of thinly bedded
schist. Covered by sparse,
recently burned Imperata,
with considerable
Andropogon, various
other grassland species,
as Wahlenbergia, etc.
in small amounts.

1956 Ryukyu Is.

June 11 - 1.5 km. north of Miyara

87 dissected limestone roughly aligned in parallel short ridges and rows of rough outcrops, some with furrows or very shallow ravines between them, more commonly with elongate cultivated patches between them. Where there are cultivated patches the ridges are accentuated by throwing of coral picked up in the patches on the ridges.

Where not cultivated the spaces between the ridges are covered by Imperata with many associated species Rosa and Psidium are very conspicuous. Setaria, Themeda, Paspalum orbiculare, Fimbristylis 2 spp. Lygodium, Labiates. Lespedeza cuneata, Centella, Elephantopus are all common.

Ridges vary from almost bare to brushy. Usually some Miscanthus Ficus, Ampelopsis, Polypodium, On larger ones Pandanus, Toddalia, Morus, Pipturus, Arenga, Allophylus. Smilax, Lygodium, Thelypteris, Broussonetia, Crataeva, etc.

88 Patch of woods of Ficus 2-3 spp., Hibiscus tiliaceus, Morus, Rhus, Pipturus, Melia etc Melanolepis, Pterocarpus, forming a fair canopy, tangled with Ipomoea Smilax, etc. Lygodium, Flagellaria, Clematis, Thick undergrowth of Ardisia, Psychotria, Damnacanthus, Alocasia, Boehmeria, Evodia,

89 Across road is outcropping of Eocene limestone.

June 11 – 1.5 km. n. of Miyara, s. of Miyara, Makinaka
in grass on shallow soil between limestone outcrops.

65 ~~40 m.~~ –30 m.

5 37428 (~~Leuc.~~) Teucrium viscidulum var. miquelianum (Maxim.) Hara
occasional
flowers with lip deep pink, tube white.

3 29 Fimbristylis monostachyos (L.) Hassk.
occasional

3 30 Fimbristylis dichotoma (L.) Vahl
occasional
30 culms single or in tufts of 2 or 3.

5 31 ~~Themeda japonica~~ Apluda mutica L. det. A. Love
locally common
31 culms ~~single~~, ~~[illegible]~~ erect from prostrate base on stilt roots.

same – cultivated field

2 32 Duchesnea indica (Andr.) Focke
weed in cultivated field, in full sun.
32 prostrate; petals yellow.

same – on rough limestone outcrops

3 33 ~~Polypodium scolopendria~~ Burm. f. Microsorium scolopendria (Burm. f.) Copel.
common
33 fronds erect.

2 34 Thelypteris Cyclosorus acuminatus (Houtt.) Nakai det. E. Walker
common

2 35 Randia sinensis (Lour.) R. & S.
occasional
35 shrub, fruit immature, branches rigidly decussate.

2 36 Broussonetia papyrifera (L.) L'Her.
occasional
36 shrub; sterile.

2 37 Crataeva religiosa G. Forst.
rare
37 shrub; sterile.

4 38 Allophylus timorensis (DC.) Bl.
rare
38 shrub, flowers white

3 39 Polygonum chinense L.
common
39 extensive scrambling herb. flowers white. ~~creeping~~ prostrate stems rooting at tips.

1956 Ryukyu Is.

37440 Phaseolus
1 occasional

same – in patch of
dense tangled woods
1 41 Morus (australis var.?)
common
2 42 Murraya paniculata (L.) Jack.
occasional, edge of wood
5 43 Randia sinensis (Lour.) R. & S.
very common in undergrowth
2 44 Psychotria
common in undergrowth

June 11 – Akashita, bridge over
Miyara River, 3 km.
n. w. of Miyara
in old quarry in
argillaceous limestone
5 45 Nephrolepis exaltata (L.) Schott
abundant
5 46 Pteris vittata L.
common
5 47 (grass) Pogonatherum crinitum (Thunb.) Kunth det. A. Chase
common
1 48 Euphorbia chamaesyce paramaquensis (Blanc.) Hara
occasional
5 49 Wedelia biflora
common
4 50 Melanolepis multiglandulosa
common
in thicket on side of
road cut

---

flowers yellow,
keel twisted.

80 m.

tree 6 m. tall, spreading.

OK 42 shrub 1.5 m. tall;
flowers white.
43 shrub 2.5 m. tall.

44 shrub.

20 m.

OK 45 fronds erect.

46 fronds ascending

48 erect, tips arching,
flowers white.
49 sprawling herb,
flowers yellow.

1956 Ryukyu Is.

same – in river terrace forest, limestone soil

37451 ~~bamboo~~. Bambusa multiplex (Lour.) Raeusch.
2 common

5 52 Ageratum houstonianum Miller
occasional in small opening.

5 53 ~~Orchid~~ Nervilia aragoana Gaud.
small colony in grass under trees

Melicope [illegible] (Hatusima) Ohwi & Hatusima

5 54 ~~Evodia~~
common in understory

5 55 ~~Evodia~~ same
common in understory

5 56 Oplismenus compositus O. patens Honda det A. Chase
carpeting ground under trees

5 57 Cordia dichotoma Forst.
common

5 58 (~~euph.?~~) Antidesma pentandrum var. barbatum Merr.
occasional

1 59 Mucuna urens same as 58
rare

June 11 – 0.7 km. e. of Kawahara, 4 km. n. of Miyara
grassy schist outcrop

1 60 Lagenophora crepidioides Kudo

---

15 m.

det. F.A. McClure

culms scattered, green, erect, 8 m. tall.

52 ~~flowers~~ sprawling branched herb, flowers mauve blue.

53 erect from ~~depressed~~ globose ~~[illegible]~~ corm, sepals and 2 petals green, lip white with purple lateral veins.

54 shrub 2 m. tall, ♂

55 shrub 2 m. tall ♀

56 stems prostrate fruiting culms ascending

57 tree 5 m. tall, almost leafless at this season; fruits green.

58 woody vine, catkins greenish.

59 pods hanging on dead vine.

40 m.

1956 Ryukyu Is.

June 11 – 3.3 km. n.n.w. of Miyara, 0.5 km. n.e. of Akashita
in small grove of pines
on volcanic outcrop

37461 Lilium longifolium
5 common

June 12 – 2 km. s.e. of Dacho-zaki to 2.2 km. e. of Dacho-zaki

Smooth grassy hills, rather closely grazed. (90) grass mainly Imperata, with much Pteridium of small size, fronds not more than 3(-4) dm. long. Many herbs such as Evolvulus, Blumea, Gynura, Lycopodium, peculiar lythraceous one, Thelypteris, etc.

(Photos 343-156)

(91) Scattered fairly large spreading pines. These mostly show fire scars and charring on lower part of bark. Undoubtedly the area has been burned not long ago.

Patches of Alpinia speciosa on upper slopes.

As H. Foster this area burned about 10 months ago

Scattered small depressed shrubs of

bulb scales bright yellow, white within.

Psidium and Rosa

(91) In shade of pines are some species of herbs as Ligularia, Youngia, Desmodium.

92 Steep east-facing cliff has some scraggly pine, Miscanthus, Osbeckia, Eurya sp., Smilax, shrubby Quercus cuspidata, and, notably, Lespedeza sericea. + a few other shrubs, on steeper parts, on gentler slopes Imperata and Pteridium.

(93) Upper open pine woods with Pteridium and scattered shrubs grades into a

(94) mixture of pine and dense scrub forest of

Viburnum, Raphiolepis, Rhus,
Wendlandia, Eurya, Cyathea, Ficus,
Liquidambar and many other broad-
leaf evergreen shrubs
and small trees.
Loose shrub layer
inside with ferns and
Ligularia. Dense among
edges with shrubs, Psidium
Miscanthus, Pteridium, etc.

In head of large
wooded ravine - a
95 considerable colony of
Livistona - many trees,
from small rosettes to
trees with trunks 5 m. tall.
Leaf tips droop, but not
as much as in some
cultivated specimens.
All petioles seen are spiny,
the spines long, sharp and
well separated. Older trees
have last year's inflorescences.
no new ones seen

On some exposed steep south
96 slopes the vegetation is
a mixed scrub

97 High pine woods tend to
have undergrowth largely
Miscanthus in places.

Windbeaten Eurya and
93 Rhododendron shrubs
(photos 945-34) common in edges of
Pinus pine, some Miscanthus,
[illegible] Juniperus, Ligustrum, Rosa,
Osbeckia, on high rock. One
Scaevola bud

Back a little bit,
Rhododendron, Eurya,
Glochidion, ~~&~~ Liquidambar,
etc. form a dense
scrub. A few pines
in edges.

From here up to crest
99 is thick forest, 10-12 m.
high of Diospyros, Ardisia,
Lauraceae etc. Trees as
much as 7.5 dm. dbh (some even 4 dm.)
Shrub layer of Psychotria,
Croton, etc. badly
disturbed by cattle.
Ferns abundant on ground,
Some lianes.

Some volcanic breccia here.

Forest on crest much the
100 same, but slightly lower
stature. Fern becomes an
important component.
Livistona and Arenga fairly
common, one Livistona seen
10 m. tall
101 at the summit the forest
is somewhat drier, more

open beneath. Less ferns and other ground cover, though this may be due to grazing as on one side of fence there is more luxuriant ground cover.

A few epiphytic ferns, incl. Asplenium nidus, Pyrrosia, Nephrolepis.

(101) The crest is a broad rounded ridge, rising to a gentle peak, then descending to a saddle.

In the saddle the (102) forest is somewhat taller, to 15 m. and has some enormous Ficus.

A few secondary trees seen here, cf. Macaranga, Trema. Livistona rather common. Some seen with petioles prickly only half or 1/3 to top. Only 15-20 cm. of segment tips drooping. Garcinia [illegible] occasional.

A climbing Piper and an Aroid, cf. Rhaphidophora, very common here.

An enormous centipede

seen 15 cm. up on a bush. Another seen the other day also on bush. "ngaga" ([illegible]) said to bite fiercely.

(103) Back from saddle southward on west slope is a considerable grove of Livistona up to 10 m. tall. All have petioles thorny in lower half or 1/3. Most have some half grown fruit. Ground tends to be bare beneath them, but with a few ferns and [illegible].

Very few dead leaves persist on palms. Trunk base, outer layers tend to be eaten off by insects, so leaf scars become obscure. Longitudinal fissures prominent. Color a dull to reddish brown.

Slope forest in contrast with bottom of saddle mixed, palms prominent, Ardisia, Dysoxylum, Ficus etc. Ferns being luxuriant especially (104) in gulch bottoms. Forest 10-15 m high. Some epiphytes.

1956 Ryukyu Is. ISHIGAKI

(105) Ravines in dissected coastal terrace are filled with thickets. Trees seen include Pinus, Rhus, Glochidion, Macaranga, ~~Be~~ Cerbera, Ficus, Pandanus, ~~[illegible]~~, Mallotus, Ehretia

June 12 – Kura, 2 km. s.e. of ~~[illegible]~~ Dadifu Saki, on north peninsula.
on grassy slopes and low hills with scattered pines

37462 Melastoma Osbeckia
5 common locally on low ground in deep grass.

2 63 (~~[illegible]~~.) Machilus thunbergii S. & Z.
common in low wooded ravines

4 64 Ehretia dicksoni dicksonii var. japonica Nak.
common in low wooded ravine

ridge s. of Kura Dake
~~same~~ – upper edges of forest along crests of ridges

2 65 Itea formosana H.L. Li
2 66 Hibiscus mutabilis L.
rare
5 67 Eurya
common
6 68 Pinus luchuensis Mayr.
abundant, dominant locally, scattered elsewhere

35 m.

chinensis L.
flowers rose pink.

small tree; leaves somewhat glaucous beneath, old inflorescence red.

ok small tree, fruit greenish yellow.

150 m

65 shrub 2 m. tall
66 shrub 2 m. tall

67 shrub 1.5 m. tall, fruit immature
ok 68 spreading tree 10 m. tall, 3 dm. dbh.

1956 Ryukyu [illegible]

37469 Viburnum awabuki K. Koch
6 common

6 70 Scaevola ~~fr~~ sericea va.
rare on brink of cliff
in open grassy rose

3 71 Ficus foveolata var. thunbergii —
local, clinging to rocks
in edge of pine ~~[illegible]~~ woods

Kura Dake,
June 12 — 2-2.2 km. e. of
~~Dasho-gaki~~ Dadifu daki
in dense moist forest

9 72 Asplenium Colysis wrightii (Hook.) Ching
abundant in bottom
of moist ravine cut in
schist

5 73 Alpinia
common ~~[illegible]~~

4 74 Heterosmilax ~~Smilax~~ japonica Kunth.
det. T. Koyama 1959
occasional

2 75 orchid Calanthe fourniei [illegible]
occasional, terrestrial

(Stauntonia hexaphylla (Thunb.) Decaisne
2 76 Schefflera odorata
rare

150m. 69 small tree 6 m. tall.
— fruit red, not quite mature.

70 shrub 1.5 m. tall
flowers white with
purple veins.

(Maxim.) King — 71 vine, clinging to
rock but with
erect branches, also
with characteristic
witches brooms; sterile.

200-250 m

72 dark green, fertile
fronds erect, sterile
spreading.

73 rhizome aromatic,
stems ascending.
— fruit immature, smooth.

74 extensive climbing
stem from a hard
tuberous rhizome;
— fruit immature

75 ~~flowers~~ leaves a dull
translucent grayish
green. flowers white
with ~~[illegible]~~ a bright
orange spot in middle
of lip.

— 76 sterile woody vine,
leaves with conspicuous
reticulate venation beneath.

1956 Ryukyu Is.

June 13 - s. w. base of Banna-dake
on weedy roadside

37477 Crotalaria mucronata Desv.
6 occasional

5 78 Paspalum conjugatum Berg.
abundant

I. pes-caprae
3 79 Ipomoea pes-caprae var. brasiliensis
several plants seen

1 80 Artemisia capillaris Thunb.
common

1 81 Wedelia chinensis (Osbeck) Merr.
common

Cynanchum liukiuense Warb.
5 82 Vincetoxicum
occasional in thicket

(Helicteres angustifolia L.
3 83 Melochia corchorifolia?
common

1 84 Hedyotis
rare H. diffusa ?

Ficus formosana
5 85 ~~Diatylium racemosum~~
common in thickets

5 86 Ageratum conyzoides L.
common

1 87 Lysimachia mauritiana Lam.
occasional

erect much-branched herb
1 m. tall, flowers bright
yellow with dark brown
spot at base of wing.

[illegible]

erect culms from
creeping superficial
rhizomes.

prostrate, flowers
bright purple collapsing
about 4 p.m.

erect herb, odor not
very strong.

prostrate, flowering
stems ascending.
flowers yellow (rare at
this season)

milky herbaceous
vine. flowers with
corolla lobes reddish
with green centers,
corona white; pods green.

flowers pale lavender.

flowers white.

H. L. L.

shrub 2 m. tall,
flowers white.

erect strong smelling
herb; flowers white.

leaves fleshy, flowers
white.

1956 Ryukyu Is.

s. w. base of Banna-dake
small shrine with
no forest around it.
The gently sloping
(106) land at the foot of the
mountain is covered
(photo by an irregular mixture
940-8) of thickets and grassy
or weedy patches. The
thickets are mainly
acacia confusa, probably
planted, and pine, perhaps
planted. The younger
thickets have consider-
able ground cover of ferns,
etc. Older ones have very
little. Mixed with the
planted trees are native
ones, such as Ficus,
Distylium, etc. Some
Miscanthus here and
there in edges and thin

spots. The small
road is lined with
weeds, dominantly
Paspalum conjugatum
and Imperata, but
many other species.
The slopes above, examined
with binocular, are
(107) semi-open, with
bushes and grass,
mostly Miscanthus
in most places.
Acacia confusa goes
well up the slopes.

June 15 - shore southeast of Hirai

(Photo 347-8)

(108) Beach ridge with scrub of Scaevola, Premna, Pandanus, Miscanthus, Hibiscus, Vitex, Messerschmidia, Wikstroemia, Clerodendrum inerme, mostly closed, varying from to 2 (or even 3) m. in height.

a little Guettarda, Terminalia catappa & Wedelia biflora

(110) From the front of the ridge a rough but abraded limestone platform protrudes about 20-25 m., about 3 m. above a well developed erosion ramp, this notably abraded and with an accumulation of well rounded cobbles and pebbles at top and scattered in pits and pot holes on it. Platform in places undercut as much as 2 m. the nip very well abraded, elsewhere not undercut, fronted by a pebble or cobble beach. Ramp about 1 m. high. In undercut places fresh water dripping from ceiling (heavy rain yesterday and last night).

Locally some patches of sandy beach. Here are scattered Ipomoea pes-caprae, Euphorbia chamissonis,

Lepturus repens, etc.

On the top of the platform the relief is about 1 m. generally. The vegetation is a mixture of Zoysia tenuifolia, Pemphis (very prostrate) Carmona (very prostrate), Hedyotis, Lepturus, Indigofera, Limonium (?), and patches of low bushes of Hibiscus, Messerschmidia, Scaevola, Crinum, Vitex, Euphorbia, Artemisia, etc. The cover is rather full but in places there is considerable limestone showing.

Thuarea
Asparagus
Premna
Cassytha
Lilium
Wedelia
Fimbristylis

(111) Large stretch of beach on photo has been somewhat eroded, exposing patches of the platform and large areas of pebbles and cobbles. This has scattered tufts of Euphorbia, Lepturus, Messerschmidia (very small bushes, Scaevola seedlings, etc. Some Thuarea. The sand is being excavated and hauled off.

(109) plain back of beach ridge where coral is very close to surface and is exposed here and there. Some small areas of this are cultivated. Mostly it is in grass, chiefly Imperata.

Close to the beach ridge there are scattered bushes of Scaevola, Premna, Vitex, etc. especially on limestone outcrops.

Away from the ridge these are more and more replaced by Psidium, Rosa, Osteomeles (?), Raphiolepis, Ampelopsis, Rubus Callicarpa, etc.

Many herbs, especially Evolvulus, Lespedeza, Desmodium, Leucas, etc. in grass.

Farther away from beach Psidium becomes very abundant in grass. In places it may form half the cover.

Patches of Agave americana are occasional. Cycads are not common here but are found.

June 15 Ohama - mouth of inlet

(112) (Photo 847-46) Scrubby forest on rough limestone. Mixture of Hibiscus, Ficus retusa, Broussonetia, Pandanus, Pouteria, Murraya, Mallotus, Carmona, away from sea, Mácaranga, Ficus sp. Melanolepis, Erythrina

— Enormous orb-weaving spiders with leg spread of 18 cm. or more. Several colors, very small males or else another species, not more than 1.5 cm. across commensal in same web.

— Large ones eating scarabs.

Interrupted inland by small patches of garden between outcrops. Trees get taller inland. Varies from about 2 m. on outer edge to even 8 m. inland. Some Calophyllum, Casuarina and Acácia inland, perhaps planted.

This whole forest very dense and tangled with vines — Ampelopsis, Caesalpinia, Clematis, Polygonum. Toddalia, Vitis,

(113) On west side of inlet is well developed beach rock with seeps of fresh water trickling down over it and seeping out of it. Maximum thickness seen about 0.8 m. Mostly rather fine grained ~~Maximum thickness~~ Upper parts rather pitted lower parts in places broken up. Some loose beach sand locally.

A Phyllanthus-like shrub but leaves not distichous, common at base of cliffs and on upper part of beach, with Hibiscus, Clerodendrum various grasses, etc.

On limestone bluffs is scrub of Hibiscus, Pandanus, Arenga, Erythrina, Pipturus, Ficus, ~~etc.~~ Pittosporum Ligustrum, Carmona Raphiolepis, Premna Garcinia. Dense tangled, 2-4 m. high. Pandanus and Hibiscus are most abundant.

On eroded beach rock well below high tide level, Limonium (?) Zoysia, etc. grow abundantly in pits and crevices. Above this, especially on sandy spots, Ipomoea pes-caprae and Zoysia tenuifolia, Euphorbia chamissonis, Vitex, etc. are abundant.

114 East of Ohama along shore is rather extensive beach scrub of Scaevola, Hibiscus, Pandanus, Premna ~~etc.~~ Clerodendrum, etc. The shore here is low and shelving, composed of a mixture of sand and coral gravel, occasional outcrops of post-miocene limestone some of them huge boulders or remnants. The sandy and gravelly flats here where not covered by beach scrub, are grassy, with Sporobolus virginicus below high tide level, several other halophytes, Zoysia tenuifolia and Ipomoea pes-caprae in patches above

high tide.

In large limestone
boulders is a sparse
scrub of Premna, Pittosporum,
Carmona, Ficus, Pemphis,
Messerschmidia, Raphiolepis,
with Lepturus, Zoysia
tenuifolia, Hedyotis, etc.

June 15 – Between Miyara
and Shiraho

Wide coral plain between
(114) road and coast, very
little of it in cultivation,
mostly in pasture.

The half nearest the
road is a mixture of
Imperata with Miscanthus
probably M. sinensis,
judging by the very narrow
leaves. The soil is
thin and scab-like
outcroppings of the
rough limestone are
frequent. Many herbs
and considerable
Psidium mixed with
the grass. Large areas
have broken coral rock
in pebble sizes instead
of soil. A few small
115 clumps of Cycas.

Toward the sea
the Miscanthus drops
116 out and Imperata
and Setaria are
the abundant grasses.
Psidium is frequent.
Rosa, also. Many
herbs and a few shrubs
are mixed in.

Principal herbs seen
are:

Lespedeza cuneata
Artemisia
Galium
Euphorbia hirta
Leucas,
Panicum reptans
Conyza bonariensis
Emilia sonchifolia
Fimbristylis monostachya
Centella asiatica
Vernonia cinerea.
Desmodium spp.
Phaseolus

June 15 – just east of Shiraho-saki

The shore here is peculiar.
119 There is an erosion ramp
about 50 m. wide, pitted
and covered by solution
basins. Little or no abrasion evident.
Limonium is
abundant here, below
high tide level. A little

Sesuvium with it.

Behind this is a
118 flat about 30 m. wide,
of a veneer of sand
Heavily grazed covered by a dense stand
of Zoysia tenuifolia with
a few miscellaneous
herbs. Many young
Messerschmidia along
landward margin.
Then a broad boulder-cobble ridge, covered
117 by a low beach scrub
of Messerschmidia,
Pandanus, Clerodendrum,
Scaevola,
with Thuarea, Vitex,
Zoysia, etc. in openings

On grassy flat
back of boulder ridge
~~70~~ 300 m or more from sea
are many large pieces
of pumice lying on
the ground, or rough
coral.

Here the rough limestone
outcrops are arranged
somewhat in rows, rather
zigzag, perpendicular to the
coast.

June 15 just west of
Shiraho

120 band of low tangled
brushy vegetation
on limestone. A mixture
of Pandanus, Cycas,
Alpinia speciosa, Miscanthus,
Toddalia, Carmona,
Calophyllum, Allophylus,
Premna, Psidium, Murraya,
Mallotus, Ficus, 2 spp.

This is tangled with
Ampelopsis, Wedelia,
and Clematis.

This is mostly 2-3 m.
tall, but where there is
much Calophyllum it
may be 5-6 m.

Here and there patches
are cleared in this and
planted to 2 varieties of
Sorghum and Luffa (?).

1956 Ryukyu Is.

June 15 - ~~Miyara~~ 1 km. e. of Miyara Miyara

in grassland on soil between outcrops of rough limestone.

37488 ~~[illegible]~~ Crotalaria linifolia L. f.
3 occasional

2 89 Vernonia cinerea L.
common

2 90 Conyza bonariensis Erigeron bonariensis
common

1 91 (rub) Knoxia corymbosa L.
rare

1 92 Wahlenbergia gracilis (Forst.) A. DC.
occasional

June 15 - 1 km ~~east~~ N. of Ohama, on Miyara-Wan, near Isobe 1 m.

3 93 Lotus australis Andr.
occasional on sandy beach

3 94 Sophora tomentosa L. ok
rare on limestone boulder

3 95 Pemphis acidula Forst. f. ok
occasional on rough limestone

5 96 Ficus retusa var. nitida (Thunb.) King
occasional on rough limestone boulders

7 97 Sesuvium portulacastrum (L.) L. ok
salt flat, inundated by high tide

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② 37488a Scaevola taccada (Gaertn.) Roxb.

erect, flowers yellow.

ok flowers purplish.

small plants flowering, larger ones not yet.

flowers bluish violet.

prostrate, flowers white.

small shrub

depressed shrub, flowers white.

depressed shrub, figs purplish.

prostrate, very fleshy, stems greenish with reddish nodes, leaves green, glossy, compressed, flowers pink.

1956 Ryukyu Is.

37498 Suaeda australis (R. Br.) Moq
5 local on saline flat, inundated by high tide

2 99 Galium
on rough limestone ~~on~~ in edges of brush.

37500 Sporobolus virginicus (L.) Kunth
2 dominant on sand flats below ~~high~~ tide level.

June 15 - just east of Ohama, on Miyara Wan

2 01 Limonium arbusculum (Maxim.) Makino
abundant on rough limestone below high tide level.

5 02 Ligustrum japonicum Thunb.
common on low limestone bluffs above beach

5 03 Phyllanthus? flueggeoides M.-A.
Securinega?
common at top of beach

6 04 Solanum verbascifolium L.
rare in scrub on rough limestone

6 05 Polystichum Cyrtomium falcatum (L.f.) Presl
on shaded limestone cliff

June 15 - Tada Hama, on coast s.s.e. of Hirae

on sandy beach ridge

2 06 Digitaria
occasional

5 07 Scaevola sericea Vahl
very common in beach scrub

erect, very fleshy.

[illegible]

1 dwarf shrub, mostly sterile, a few in bud.

2 shrub 1-1.5 m. tall, fruits very immature.

3 shrub 1 m. tall

4 shrub 2 m. tall; flowers white, ripe fruit yellow.

1-3 m.

6 culms spreading

Th 7 shrub 1.5 m. tall; flowers white, fruit white.

37508 Allophylus timorensis (DC.) Bl.
2 occasional in beach ridge scrub.

2 09 Scaevola sericea var.
common in beach ridge scrub

6 10 Ipomoea littoralis Bl. gracilis R. Br.
common at edges of beach ridge scrub

5 11 Chenopodium acuminatum Willd.
common on sandy patches on limestone terrace just above sea.

2 12 Indigofera liukiuensis Makino
common on rough limestone just above sea

2 13 Cassytha filiformis
occasional parasitic on various plants on rough limestone near sea.

1 14 Lepturus repens (Forst.) R. Br.
very common on rough limestone near sea

2 15 Artemisia capillaris Thunb.
common on rough limestone near sea

5 16 Leucas
common on rough limestone near sea

2 17 Lotus australis A-h.
occasional on rough limestone.

June 15 – Yuriga Hama, 1 km. e.s.e. of Miyara on coast.

1 18 Pilea peploides H. & A.
on rough limestone at top of beach, in pits and crevices.

shrub 1 m. tall.

shrub 1 m. tall, flowers purplish, fruit white.

prostrate, flowers rose purple, darker in throat.

erect

prostrate, flowers red; pods quadrangular.

Twining yellow stems.

16 flowers white.

17 prostrate, flowers white

1 m.

stem fleshy.

June 16 – north of Ozata
east of Kara-dake

(121 (Photo 950-4)) Scattered pines on grassland on schist. Gullies either grassy or filled with Pandanus scrub. Some admixture of miscellaneous shrubs and small trees.

122 Eocene limestone area ~~covered by~~: where it is not much dissected – covered by a thick forest of Ficus, Diospyros, Ardisia, etc. Scarcely any undergrowth except tangled bases of lianes. Scattered second story trees.

Canopy irregular 6-10 m. Mainly Ficus and Diospyros, but occasional Melanolepis ~~and~~ Macaranga, Garcinia. Ardisia, Viburnum and small Diospyros in second story.

Lianas are Smilax, Piper, Clematis, Elaeagnus, Cappati
spiny Randia, Pisonia aculeata

Almost nothing on ground except a few creeping Piper vines.

Much bare angular rock exposed, mostly limestone but some of it rather sandy.

Some Alocasia, and very few ferns.

Locally in ~~south~~ central part of forest several other trees. Pisonia aculeata very commonly climbing through trees. ~~Fruit~~ Fallen fruit abundant on ground and hanging in trees. Arenga common generally.

In ~~south~~ central part are
123 enormous jointed
castle-like blocks of
limestone, simulating
human construction.
Banyan roots enveloping
many of these.

124 The higher parts of the forest are perhaps 15-20 m. and are principally enormous banyans. Under them are Diospyros, Garcinia, Murraya, sparingly laced with Smilax, Flagellaria, etc.

Walking gradually
seaward and downward
over a series of escarpments,
encountered more and more
post-Miocene limestone,
but never completely
left the Eocene limestone.
Finally, at the same
time, there were quantities
of large pumice cobbles
and Hibiscus and
Hernandia became
common, then dominant.
To here Diospyros and
Ficus, with some Ardisia
and Garcinia had
made up the greater
part of the forest.

The marginal 100 m.
(125) or so are a solid, somewhat
windsheared, stand of
Hibiscus and Hernandia
with some Pandanus.

At the top of the beach
is a belt of Vitex, Ipomoea
pes-caprae, Clerodendrum
and small bushes.

The inner edge of the
reef flat is littered
with a great abundance
of large boulders,
up to 2 m. or more in diameter.
Most of these are post-
Miocene limestone, a few

are Eocene.

At the mouth of the
126 southernmost dry
inlet are some fine
Eocene boulders out in open
similar to those in forest.
Also a contact, vertical(?)
between Eocene and post-
miocene. The contact is
in the bottom of the inlet
with Eocene much higher
on south side of inlet.

Trees + shrubs at top
of beach – Calophyllum
Clerodendrum, Wikstroemia
Terminalia catappa, Thespesia,
Messerschmidia, Dodnaea,
Sophora, Colubrina, Guettarda.
All except the first 3
and Messerschmidia
are rather scarce.
Scaevola seen only
on the north end,
within a ~~few~~ couple
of hundred meters of
the stream mouth.

(27 Along the stream is a
1-2 m. tall clearing that is filled
with low old-field scrub + grass.
Vitex, Dodonaea, Scaevola, Pandanus, Fraxinus(?)

128 A small patch of Bruguiera
in stream above bridge.
Below bridge stream is lined

1956. Ryukyu Is.

with Excoecaria. Back of this is a scrubby mixture of Erythrina Ficus, Cerbera, Scaevola, Ehretia, Dodonaea, ~~and~~ Pandanus. Clerodendrum inerme, Cassia, Psidium, Alpinia speciosa, Calophyllum Leucaena, Fraxinus? Hernandia, etc. 3–5 m. tall.

June 16 – coast n.e. of Ozato, ~~east~~ of ~~Kara-dake~~ south of mouth of Toro gawa.

on sand flat at top of beach

1 37519 ~~[illegible]~~ Pouzolzia indica var. angustifolia (Wight) Wedd.
rare

3 20 Guettarda speciosa L.
rare in edge of forest.

5 21 Wedelia prostrata (H. & A.) Hemsl.
local in grassy area

6 22 Allophylus timorensis (DC.) Bl.
rare in edge of forest

3 23 Colubrina asiatica (L.) Brongn.
rare at edge of forest

3 24 Dodonaea viscosa (L.) Jacq.
rare at edge of forest

1 25 Ipomoea stolonifera (Cyr.) J.F. Gmel.
rare and local

June 16 – s.w. base of Banna-dake
Rice field weeds – Ageratum conyzoides, Eclipta alba
Hypericum sp., Marsilea sp.
Lindernia sp.,
Arthraxon hispidum,
Centella asiatica
Emilia sonchifolia,
Panicum repens,
Echinochloa crus-galli
Monochoria vaginalis
Polygonum sp.

2 m.

fruits red, fluted.

shrub 2 m. tall

very prostrate, flowers yellow.

Shrub 1.5 m. tall, buds white; fruits not quite mature.

shrub 1 m. tall, sterile.

shrub 1.5 m. tall, sterile.

prostrate, flower white.

1956 Ryukyu Is.

37526 Ixeris japonica (Burm.) Nakai
1 common on bare sand
1 27 Ixeris repens (L.) A. Gr.
common on bare sand

2 28 Chenopodium acuminatum Willd.
occasional on bare sand
2 29 Lepturus repens var. R. Br.
occasional
30 ~~(illeg.)~~ ~~Cassia~~ Indigofera [illegible] var. [illegible] (Matsum.) Ohwi
occasional at edge of forest
~~30~~
same – at about high tide level on pitted large limestone boulders on lower part of beach
5 31 ~~(illeg.)~~ Philoxerus wrightii Hook. f.
common
~~32~~
1 32 Limonium arbusculum (Maxim.) Makino
common

June 14 – terraces ~~east~~ n.e. of ~~Kanandake~~ Ozato in dense forest on dissected Eocene limestone
2 33 Damnacanthus
rare
6 34 Premna obtusifolia R. Br.
common locally
1 35 ~~Mucuna~~ Mucuna
common locally

Ishigaki I.

rhizome buried, running, flowers yellow.
— rhizome buried, running, leaf blades flat on
— surface of sand; flowers yellow.
erect

tufted

shrub 1.5 m. tall

1 m.

31 forming dense mats and cushions; fruits red.
— 32 dwarf shrub, buds only.

10-20 m,

33 ~~dense~~ very small shrub, sterile.
— 34 tree 8 m. tall, flowers pale green, ripe fruit black.
— ~~(seeds picked up on~~
vine climbing in tops of trees (seeds picked up on ground beneath).

1956 Ryukyu Is.

37536 (euph.) Mallotus philippensis (Lam.) M.-A.
10
rare

5 37 Pisonia aculeata L.
common

3 38 Boehmeria formosana Hayata
rare

3 39 Lysimachia sikokiana Miq.
local

3 40 Randia canthioides Champ. ?
common

5 41 Viburnum awabuki Lindl.
rare

5 42 Ficus konishii Hayata
common

June 17 – north of mouth of
Todoroki-gawa

5 43 Zanthoxylum amottianum Maxim.
common on sand-ridge
back of beach

Ishigaki I.

small tree 6 m. tall;
fruit red.

37 scrambling vine
climbing in tree tops,
~~[illegible]~~ spiny
and spineless, not
certain if different
plants or branches of same,
& spiny branches may
be from different plants,
fruits picked up on ground.

38 herb 1 m. tall.

39 flowers yellow

40 scrambling ~~[illegible]~~ shrub
with tendency to
produce rigid short
branches, fruit immature.

41 small tree, 4 m. tall,
fruits immature.

42 tree with large
butresses at base of
trunk, fruits on small
branchlets coming out of
trunk and large limbs.

4 m.

43 rounded densely branched
bush; leaves glossy,
fruits green, glandular.

1956 Ryukyu Is.

June 17 - Ishigaki City -
Cultivated plants observed:
Trees: Garcinia spicata
Calophyllum inophyllum
Morus sp.
Prunus persica
Carica papaya
r. Cocos nucifera
r Areca cathecu
Ficus retusa
Casuarina equisetifolia
Podocarpus macrophyllus
Ehretia
Citrus
Melia
Livistona
Hernandia
Delonix regia

Erythrina
Hibiscus tiliaceus
H. schizo[illegible]

shrubs: Codiaeum variegatum
Cycas revoluta
Hibiscus (ornamental hybrid)
Rosa
Cordyline
Polyscias guilfoylei
Bougainvillea
Acalypha

garden plants: Luffa sp.?
Xanthosoma sagittata
Musa
Cinnamon
Luffa
Cucurbita

Shrine forest:
Calophyllum inophyllum - large, 300 yrs.
Casuarina equisetifolia
Ficus retusa
Ficus
Hernandia

June 18 - Taketomi, shore near pier -
narrow sandy beach backed by a low sea wall. Back of the wall is a narrow strip of scrub.

Between the pier and Hazama is agricultural land. It is merely the accumulated soil between closely spaced outcroppings of rough limestone. On these, and even on piles and fences of rock picked up from the fields, Cycas is very abundant.
In the small fields or plots sugar cane, sesame, mung beans ~~cowpeas~~ sweet potatoes and millet were observed.

Acacia confusa (~~sol~~ soshiju)
planted for typhoon protection and for wood.

Hazama Village:
Rosa sp., Chrysanthemum sp., Asclepias curassavica, Catharanthus roseus, Canna hybrid, Codiaeum variegatum, Zephyranthes rosea, Sansevieria, Podocarpus, Morus, Garcinia, Gladiolus sp. planted in one yard

Hazama Village -
The streets are lined with Garcinia, Morus, Podocarpus, Erythrina, Livistona, Carica.
Morus used in sericulture.
Garcinia used for house construction.

Island is 2.5 ri around. (1 ri = 4000 m.)
223 families on island, 1100 pop.
88 cattle and some goats.

Nishito shrine -
Ficus retusa
Pouteria
Melanolepis
Ficus gibbosa
Garcinia
monument to grave of Nishito, historical figure who worked on Okinawa in construction of Shuri Castle. Grave is here. Old shrine was replaced in 1953. Some stones said to have been brought from Okinawa.

Tower on Akayama, paleozoic outcrop about 10-12 m. above surrounding country. General aspect of country from here is wooded, but this due to wind breaks or hedges mainly of Acacia confusa.

Sei mei Otake

Calophyllum (yarabu)
Garcinia
Melanolepis
~~Ficus retusa~~
Pongamia or Pterocarpus
Pouteria
Trema
Laurac.?
Ficus (large lf. depressed fr.)

Kuninaka Otake
Garcinia (fukugi)
(enormous)
Pouteria
Ficus retusa
Laurac.? (tabu) (bark used for incense)
Arenga
Diospyros.
Pisonia aculeata (vine)
Murraya

Kohamoto Otake
Laurac. (tabu)
Garcinia Pouteria
Diospyros
Melanolepis
Ficus gibbosa
Ficus retusa
Livistona
Alocasia very abundant
large rock outcrop

Taketomi 9.

Portulaca pilosa (jirobaa gusa) brought in by a person named Jirobu. Has become a pest.

Artemisia (native) juice used for stomach ache. (nūpan (Y))

Phaseolus
"ryoku zu" used for
(green) (bean)
bean sprouts. Taken on long voyages for Trochus where fresh vegetables otherwise unobtainable.

Ehretia
"kinashi" (T) "inuchiri" (I, O)
wood for construction

A few Areca, but not used.

Codiaeum, Acalypha amentacea, Ipomoea erecta, Alternanthera versicolor, Canna, Tagetes, Rosa, Ficus retusa; Acacia confusa, Erythrina, as ornamentals around school.

Piper sp. growing over walls. Young leaves used cooked with rice. Ripe fruit dried and used as pepper.

1956 Ryukyu Is.

Neither wet or dry rice cultivation on Taketomi. Soil is shallow. Water is short.

Even drinking water is a problem. When rains are plentiful some well water is used. Some rain is stored in cisterns. Otherwise water must be brought from Ishigaki.

Ramie is commonly cultivated, also mung beans, sweet potatoes, sugar cane. Black sugar like panela is produced. Bananas are common, especially around villages. When they are not destroyed by typhoons enough are produced to ship to Ishigaki.

Mr. Yonaguni, village chief, supplied most of the above information that could not be gained by superficial direct observation. He says there are some habu here.

Taketomi I.

Weeds in fields and along paths:
Euphorbia heterophylla
Bidens pilosa
Siegesbeckia orientalis
Setaria sp.
Artemisia vulgaris
Solanum aculeatissimum
Sporobolus elongatus
Conyza canadensis
Euphorbia hirta
Conyza canadensis
Kalanchoe pinnata
Boehmeria nivea
Sonchus
Digitaria
Verbena
Emilia sonchifolia
Cardiospermum
Cyperus rotundus
Echinochloa colonum
Euphorbia hirta
Eleusine indica
Synedrella nodiflora
Gynura
Imperata cylindrica
Artemisia
~~Conyza~~
Setaria

~~(129)~~ On rock piles and outcrops between the fields Cycas is generally common, but more so at lower elevations. Higher, Musa sp., Miscanthus sp., etc. are also very common.

Shrine toward east end.

(129) (Photo 765-25) (nos 129-133)

Garcinia
Ficus retusa
Laurac.
Diospyros
Carica
Terminalia catappa
Podocarpus
Arenga (forming thick undergrowth)
Melanolepis
Ehretia
Psychotria
Pouteria   Rhaphidophora

(130) Another farther east:
Diospyros Garcinia
Melanolepis, Melia,
Murraya, Ficus
retusa, Broussonetia
Laurac. Carica
Rhaphidophora, Psychotria
undergrowth of Arenga
Pouteria, Elaeodendron,
Diospyros ferrea? Hibiscus
tiliaceus

Taketomi I.

(131) Toward east on limestone outcrops are thickets of Murraya, Acacia, Toddalia, Musa, Cycas, Miscanthus etc.

(132) A few small plots of Acacia confusa, in addition to much of it along trails and on outcrops and stone fences with Cycas, etc.

(133) East of this more open country, still coral outcrops, but fewer hedges and thickets. Some scattered Calophyllum and Erythrina trees.

1956 Ryukyu Is.

Plants seen in thickets
and hedgerows.
Cycas revoluta
Acacia confusa
Psidium guajava
Miscanthus floridulus
Ampelopsis
Arundo donax ?
Clematis
Vitis

Taketomi I.

Beach scrub forest
on east coast
(134) Slopes toward beach
from height of
(Photo 865-25 and 150-27) Back from beach is
mainly Hernandia and
Pandanus, with
Calophyllum, Pouteria
Approaching beach
Scaevola becomes dominant,
with Messerschmidia
Guettarda, Sophora, Agave,
Premna, Wikstroemia, Pittosporum

Along beach Zoysia,
Vigna, Euphorbia,
Wedelia, Cassytha,
Ischaemum, Ipomoea
pes-caprae, Thuarea
Crinum, Chenopodium,
Vitex, Spinifex, Ixeris
Sporobolus Sesuvium, etc.
form a belt back of the active beach widest at the point.
South of the east point
~~Near south end~~ is a
shrine forest that is
(135) merely a very luxuriant
place in the beach forest
with giant Calophyllum,
Erythrina, Ficus retusa,
Pouteria and Guettarda
trees. These trees are
generally with very low
trunks and widely spreading

limbs. The canopy is complete at about 10 m. There is little undergrowth but a good ground cover of Nephrolepis, Flagellaria some seedlings of the trees, esp. Calophyllum.

There is no actual edifice here, only an open sandy space, oval in outline, about 6 m. across, 10 m. long with a round stone receptacle with sand for burning incense and a rotted stump with small vases.

It is a quiet and very impressive spot. Some Aedes mosquitoes, though, as in all other shrine forests.

Near south end there is a low escarpment
(136) of rough limestone rising to 2-4 m. At its base in the forest is a layer of pumice up to 3 dm. thick.

The limestone is covered generally by ~~beach~~ scrub of

Scaevola, Pandanus, Guettarda, Messerschmidia, Premna, Ficus retusa etc. Sedum on edges in pits. Exposed parts have conspicuous nip from about high tide level to 3 m. ~~[illegible]~~ A strongly developed erosion ramp about 15 m. wide at base, with solution basins and patches of Limonium

Here the ~~beach~~ forest or scrub is quite narrow. Where the exposed limestone ledge disappears, to the east, the forest gets wider. A dune ridge has accumulated on the outer side of it, just back from the beach. This may be 1-1.5 m. high or even a little more, sloping gradually away from the highest part back of the top of the beach.

Just back of the forest is a large area of Miscanthus and small thickets. The stand is irregular but generally

1956 Ryukyu Is.

thick, difficult to traverse, hiding rough limestone boulders and outcrops.

June 18 – e.s.e. of Hazama
broken cultivated land with rough limestone outcrops, rock piles, and stone walls.

B. lineata DC.
37544 Berchemia rhamnoides
2 rare on rocky places

2 45 Conyza canadensis
common in cultivated land

2 46 ~~[illegible]~~ Eriochloa villosa (Thunb.) Kunze
occasional in fallow grassy field

1 47 Acalypha australis L.
occasional in fallow grassy field

5 48 Clematis
common in thickets and on rock fences

2 49 Imperata cylindrica var. major (Nees) E.C. Hubb.
dominant in fallow grassy field

2 50 Zephyranthes ~~[illegible]~~
rare in fallow grassy field
Z. carinata Herb.

Poinsettia heterophylla (L.) Klotz.
3 51 Euphorbia heterophylla L.
common on roadsides and in fallow fields

5 52 Abutilon indicum (L.) Sweet
occasional along trails

Taketomi I.

20 m.

prostrate.

det. A. Chase 46 spreading and ascending.

48 extensive climbing vine, flowers cream white, very fragrant.

det. A. Chase 49 rhizomes deeply buried

50 flowers bright pink; locally believed that the flowering of this flower indicates that it will rain.

51 herb up to 0.8 m. tall, lower parts of bracts scarlet

ok 52 shrub up to 1 m. tall, flowers orange.

1956 Ryukyu Is. Crassocephalum crepidioides (Benth.) S. Moore Taketomi I.

det. R.O. Belcher

Erechtites hieracifolia var. cacalioides (Fisch. & Spreng.) Griseb.

37553 Gynura
2 common weed in fields

2 54 Siegesbeckia orientalis L.
common weed in fields

2 55 Synedrella nodiflora (L.) Gaertn.
common weed in fields

3 56 Murraya paniculata (L.) Jack.
common in thickets

2 57 Ampelopsis brevipedunculata var.
common in thickets

1 58 Musa
abundant in thickets

(

2 59 Verbena officinalis L.
common along paths

2 60 Digitaria sanguinalis (L.) Dulac
common in fields

2 61 Abutilon indicum (L.) Sweet
occasional along paths

2 62 Leucas
common in fields and
rocky places.

2 63 Cardiospermum halicacabum var. microcarpum (H.B.K.) Bl.
common along trails
and edges of fields

2 64 Emilia sonchifolia (L.) DC.
common in fields

2 65 Bidens pilosa var.
common in fields

1 66 Sonchus oleraceus L.
occasional along trails

---

53 erect, aromatic; disk
red; tubes of flowers yellow

54 flowers yellow.

55 flowers yellow

56 shrub 1.5 m. tall,
leaves bright green

57 vine, with greenish
flowers and blue berries.

58 small plant, 2 m. tall,
"trunk" dull ~~brownish~~ gray-brown,
bracts glaucous,
bronze purple,
flowers dull yellow.

59 flowers bright lavender

det. H. Ohwi 60 culms spreading

62 flowers white

63 climbing, flowers white

64 flowers purple
not much exceeding involucre.

65 disk yellow, rays
short, white

1956 Ryukyu Is.

June 18 – east of Hazama
in edges of shrine forest

37567 Ehretia dicksoni var. japonica –
2 common

6 68 Psychotria liukiuensis Hatusima !
common in undergrowth

4 69 Croton cumingii M.-A.
common in undergrowth

2 70 Carmona retusa Ehretia microphylla Lam.
occasional in undergrowth

3 71 ~~Clerodendron?~~
occasional Euonymus japonicus Thunb.

72 Diospyros ferrea ? var buxifolia
occasional

June 18 – Hazama
in village

2 73 Phaseolus mungo
cultivated in small fields
on coral limestone soil

2 74 Artemisia capillaris Thunb.
common along paths

2 75 Echinochloa colonum (L.) Link
weed in bean field

Taketomi I.

20 m.

–Nahai small tree, ripe fruit
yellow. Wood used in
construction
"kinashi" (Taketomi) "inuchiii"
(Ishigaki, Ohama)

shrub 2.5 m. tall;
flowers greenish white; fruit immature;
— stipules small, triangular.

shrub 1 m. tall

shrub 1 m. tall; fruit
immature.
— large shrub or small tree,
— flowers pale green.
small tree; fruit
immature

20 m.

flowers greenish yellow,
keel twisted.
"ryoku zu" (J) (W. green bean)
*said to be used for bean
sprouts, also made into
— sweet soup.
erect herb, branched
from base, somewhat
— aromatic.

culms ascending

1956 Ryukyu Is.

37576 Solanum aculeatissimum Jacq.
2 edges of thickets

3 77 Piper hancei Maxim.
very common, climbing
on stone walls

~~B. diffusa~~ L.
2 78 Boerhavia mutabilis R.Br.
around stone steps
in ~~[illegible]~~ public place
4 79 Portulaca pilosa L.
common in paths and
fields.

June 18 near Aibaru tabi, east point
of island
littoral ~~[illegible]~~ scrub forest
2 80 Hibiscus tiliaceus L.
common in

2 81 ~~[illegible]~~. Bryonopsis laciniosa (L.) Naudin
common on inner edge of

3 82 Toddalia asiatica Lam.
common generally in thickets
and on inner edge of

Taketomi I.

OK ~~edges of thickets~~.
herb 0.8 m. tall, ripe
fruit scarlet.
77 vine fruit immature,
(red when ripe), "piosh" (T)
young tips ~~[illegible]~~ of plant
used to flavor rice,
mature fruit dried and
used for pepper.
[illegible] 78 prostrate; flowers
pinkish white;
leaves purplish beneath.
OK 79 prostrate, leaves
fleshy; flowers magenta,
about 6–8 mm. across.
Said to have been brought
in as an ornamental
but now has spread
and is a pest. Brought
by one Jiruku, so is
called "jiruku-gusa".

2–3 m.

OK small tree, flowers
yellow with maroon
center, turning reddish.
vine climbing in bushes,
flowers yellow; immature
fruit with white stripes.
herbage with nauseous odor when bruised
OK scrambling shrub.

1956 Ryukyu Is.

37583 Vitis lanata Roxb.
2 occasional in thickets on inner edge of

2 84 Wedelia biflora (L.) DC
common on edges of

3 85 Colubrina asiatica (L.) Brongn.
occasional in edges of

2 86 Allophylus timorensis (DC.) Bl.
occasional in edges of

2 87 Hernandia sonora L.
dominant in

same
at top of sandy beach

2 88 Ischaemum muticum
common

2 89 Angelica japonica A. Gray
occasional

2 90 Crinum asiaticum var. japonicum Baker
occasional

Chamaesyce atoto (G. Forst.) Croizat
2 91 Euphorbia chamissonis Boiss.
common

2 92 Spinifex littoreus (Burm. f.) Merr.
common

1 93 Chenopodium acuminatum Willd.
occasional

2 94 Cirsium brevicaule A. Gray
common

3 95 Vigna marina Burm.
common Phasel.

2 96 ~~Lotus~~ Sesuvium portulacastrum (L.) L.
common

2 97 Lotus australis Andr.
common

Taketomi I.

vine, flowers greenish.

scrambling aromatic herb, flowers yellow.

low shrub, flowers white

small tree 4-5 m. tall, flowers whitish.

1-2 m.

prostrate, branches ascending to erect.

erect herb 1.5 m. tall, now dry and leafless.

rosettes of curved leaves, erect scapes to 0.8 m tall, flowers white, stamens and style purple.

stems spreading to ascending.

forming loose mats

erect.

heads bright purple.

prostrate, forming huge mats; flowers yellow

prostrate, fleshy, flowers pink.

prostrate, flowers white

1956 Ryukyu Is.

~~sanota~~ Busashi,
June 18. – , south coast
of island
on pitted eroded edges
of limestone terrace
37597a Sedum. formosanum N.E.B.
r locally common.

Hayama Village
~~Lagenaria~~ cult.
on walls.

Taketomi I.

3 m.

fleshy, flowers yellow.

June 19 – Kuntomari-saki
extensive sand flat
covered by ~~[illegible]~~ scrub
138 tangled mass of Scaevola,
Pandanus, Guettarda,
Clerodendrum, Pouteria,
Pittosporum, Allophylus
Flagellaria, Sophora,

South of here is a dune
ridge 1-2 m. high. On
this is a low forest of
Hernandia, Ficus, Pouteria
139 Pandanus, Elaeodendron,
Scaevola, Messerschmidia
~~[illegible]~~ Guettarda, Hibiscus
Premna, ~~[illegible]~~ Calophyllum, etc.
Back of this is a strip
of Leucaena thickets
and cultivated patches.

This strip of forest is generally only 50-100 m. wide.

Near its north end is a trail leading in to a primitive shrine, only a circle of stones with a hollowed out cylindrical one with sand for burning incense. This forest around the shrine is principally Hernandia some Guettarda, Ficus and Pouteria. It is 10-12 m. high, with loose undergrowth of Clerodendron ~~Ex~~ Morinda, etc.

up to 5 dm. dbh.

Southward the dune ridge is replaced by a rough limestone
140 terrace, covered by essentially the same forest.

At the first good exposure of this the sand beach sounds hollow when tramped upon.

Along the whole southwest coast the forest comes down to the top of the beach, with little or no herbaceous growth. No sand flat with grass, etc. as on the other side.

On the north side of Kuntomaisaki proper there is a rather broad strip of Spinifex, Thuarea, etc.

Then along the west
141 coast there is solid beach rock, clear up to the low beach ridge which is covered by tall scrub. North the ridge is replaced by a ledge of limestone, still with a broad ramp of smooth beachrock.

The scrub along this coast is 2-4 m. high, about the same composition as that south of the point. A few Casuarina and very rarely Thespesia. A rather narrow strip backed by Leucaena and Acacia.

1956 Ryukyu Is.

East of village - cultivated patches - and considerable thickets of Calophyllum,

12,7 Cycas, Melanolepis, Pothalia, Boehmeria, Acacia confusa. Musa, Melia, Ficus wightiana, Pandanus (abundant locally)

Just back of the littoral forest is a dense growth of Leucaena. Several small patches of densely planted Calophyllum, also one of Podocarpus. Thick undergrowth of Cycas in one Calophyllum patch. Leucaena in other has been cut out.

143 Littoral forest very dense Calophyllum, Hernandia, Pandanus, Hibiscus about 4-5 m high. Comes clear to sea wall.

Taketomi I.

June 19 - Taketomi island.
The vegetation may be mapped, though not too satisfactorily, by setting up the following units, (outlined on photo #150-27):

1. Village area - streets lined with stone walls around the house-lots. These often covered by Piper sp. Morus trees (about 4 m. tall) Ehretia and ~~and~~ Garcinia, ~~and~~ Podocarpus trees, tending to be taller, grow along the streets just inside the stone walls. Inside the walls, also, are garden plots and many ornamentals. Carica, Musa. Vacant lots have patches of sweet potatoes, mung beans, etc.

2. Open cultivated area - a patchwork of small cultivated plots, separated by stone walls, outcrops, hedges, etc. The stone walls and outcrops are covered by clumps of Cycas revoluta and thickets of Acacia and various shrubs. The principal

crops are sugar cane, mung beans, sweet potatoes, sesame, millet, bananas, ramie, in about order named.

3. Cultivated area with thickets: Similar to unit #2 except that as much as 25% of the area may be covered by thickets and small plantings of Acacia confusa, Leucaena glauca, and various bushes, Miscanthus, etc. Melanolepis is common.

4. Sword grass -
This seems to be abandoned cultivated land, where the rock outcrops are too numerous and soil is too shallow even for these people to farm successfully. The area is a mixture of dense Miscanthus up to 2-3 m. tall and woody thickets. Progress through this is very slow and uncomfortable. Hidden rock outcrops, boulders, and holes make walking even more painful.

1954 Ryukyu Is.

5. Littoral forest and scrub:

This is a strip around the coast, on sand and rough limestone, of tangled growth of various strand species, in places forming a scrub 1-2 m. high, in other places a low forest, up to 10 m. The composition varies. The scrubby aspects are usually dominated by Scaevola sericea with various accessory species. The forested part is most often dominated by Hernandia, but in some places by Pouteria, Ficus, or Pandanus. The seaward side usually slopes smoothly toward the beach, suggesting that wind and spray are important elements in the local climate. On the southeast side and locally elsewhere there is a herbaceous strip, usually on level sand, between the edge of the scrub and the top of the beach. Here may be found Vitex, Ipomoea pes-caprae

Taketomi I.

Spinifex, Thuarea, Ixeris, Sporobolus, Zoysia, etc.

6. Shrine forests:

These are small patches of usually dense woods containing some of the largest trees to be found on the island. The composition varies greatly. Garcinia, Ficus, "tabu", Melanolepis, Diospyros, Calophyllum and Pouteria are the trees most usually found.

Weeds seen, not collected:

Euphorbia prostrata
E. hirta
Portulaca oleracea
Kalanchoe pinnata
Melilotus

1956 Ryukyu Is.

June 19 Omasu, northwest coast
on sand above sea wall

37598 Ipomoea pes-caprae var. brasiliense
3 common

5 99 Ipomoea littoralis Bl. gracilis R. Br.
common

37600 Zoysia tenuifolia Willd.
2 common

3 01 Thuarea involuta (Forst.) R.Br. S.
common

June 19 – east of Hazama
2 02 Polypodium scolopendria Burm. f.
local on piles of limestone
between fields.

June 19 – coast west of
Hazama
2 03 Pemphis acidula Forst.
rare on eroded limestone
about high tide level
2 04 Clerodendrum inerme (L.) Gaertn.
common, edge of littoral scrub
3 05 Vitex trifolia var. simplicifolia Cham.
common, at edge of
littoral scrub
~~06 Raph~~
June 19 – near Kuntomari-saki,
littoral scrub forest
2 06 Raphiolepis liukiuensis (Koidz.) Nakai
rare in edge of

Taketomi I.

2 m.

Trailing; flowers purple,
collapsing about mid-
afternoon.

Trailing, flowers rose
purple, much deeper
in throat.

OK A [illegible]

Trailing, forming loose
mats.

20 m.

fronds erect.

Microsorium scolopendria (Burm. f.) Copel.

1 m.

OK prostrate shrub,
flowers white.

OK shrub 1 m. tall;
flowers white.

prostrate, flowers
blue-violet.

2-3 ~~2~~ m.

shrub 2 m. tall,
fruit immature

1956 Ryukyu Is

37607 Scaevola sericea Vahl
2 common in edge of

2 08 Messerschmidia argentea (L.f.) Johnst.
common in edge of

2 09 Pouteria obovata (R. Br.) Baehni
common in

2 10 Scaevola sericea Vahl
common in edge of

2 11 Premna obtusifolia R. Br.
occasional in edge of

~~12 Wikstroemia elliptica~~

2 12 Wikstroemia ~~elliptica~~ W. retusa A. Gray
rare in edge of

2 13 Lepturus repens var.
occasional ~~[illegible]~~ in
sand at edge of

2 14 Morinda citrifolia L.
in undergrowth in

3 15 Pandanus tectorius var. liukiuensis Warb. ?
common in

3 16 Smilax china v. kuru Sakaguchi ex Yamamoto det T. Koyama 1959
rare at inner edge of

5 17 Oplismenus patens Honda
common in inner edge of

3 18 Ficus ~~nightiana~~ F. superba var. japonica Miq.
rare at inner edge of

2 19 Boehmeria nipononivea var. concolor (Makino)
rare in undergrowth
at inner edge of

2 20 Guettarda speciosa L.
important component of

2 21 Sophora tomentosa L.
occasional at edge of

Taketomi I.

7-3 OK 07 shrub 1 m. tall,
flowers purple.

OK 08 shrub 1.5 m. tall,
flowers white.

09 Tree ~~10~~ 8 m. tall,
fruit immature.

OK 10 shrub 2 m. tall,
flowers white.

OK 11 shrub 1 m. tall;
flowers pale green,
fruit immature.

12 sterile shrub, 1 m. tall.

[illegible]

OK 14 sterile shrub 1.5 m. tall

15 small tree 3 m. tall, staminate;
bracts cream white.

16 vine, tangled in shrubs;
fruit immature.

det A. Chase 17 culms almost erect,
decumbent bases
on stilt roots.

18 small tree 4 m. tall, figs pinkish.

Ohwi ~~[illegible]~~ 19 weak shrub

OK 20 tree 5 m. tall
flowers white, fragrant

OK 21 shrub 1.5 m tall

1956 Ryukyu Is.

37622 Pandanus tectorius var.
5 common in liukiuensis Warb. ?
2 23 Terminalia catappa L.
rare in
2 24 Pittosporum tobira (Willd.) Ait.
occasional in scrub
margin

June 19 - coast west of
Hazama, ~~edge of scrub~~
in edge of scrub on
sand flat
2 25 Ipomoea indica (Burm. f.)
rare I congesta R. Br.
2 26 Lysimachia mauritiana
occasional
2 27 Paspalum vaginatum Swartz
local along beach
1 28 Ixeris japonica (Burm.) Nakai ?
local along beach
1 29 Rhaphanus
occasional along beach
~~30 (acanth.)~~

June 19 - Hazama
around village
2 30 (acanth.) Justicia procumbens L. var. procumbens
common in yard
2 31 Commelina auriculata Bl.
common on roadsides

2 32 Polygonum chinense L.
common climbing over walls
2 33 Commelina ~~nudiflora~~ C. diffusa Burm. f.
common on roadsides

Taketomi I.

small tree 3 m. tall.
fruit yellow when ripe.
— shrub or small tree,
3 m. tall, bud only.
— shrub 1 m. tall, fruit
immature

1–2 m.

vine tangled in scrub;
flowers blue, turning purple.
— flowers white

culms ascending.

rhizomes deeply buried.

~~[illegible]~~ flowers purple; plants
mostly dry and fruiting.

20 m.

det. E.C. Leonard flowers pinkish.

det. F.R.F. plant creeping,
flowers blue, 2 petals
large.
— vine; flowers white.

det. F.R.F. prostrate, flower blue, 3 petals
large.

1956 Ryukyu Is

June 19 - Omasu ~~northwest~~ northeast of Hazama

37634 5 Cycas revoluta L.
Very common on walls and limestone outcrops.

Taketomi I.

5 m.

OK. trunk 1.5 m. high, cone erect. Leaves pass immediately around cone.

June 20 - end of Kabira peninsula
back of Ishi-saki

(144) Pasture on flat ground with largest part of area in mixed palatable grasses and herbs, with bunches of Imperata scarcely eaten. At foot of volcanic hills.

(145) Rocky hill, mainly grassy with principally Imperata, Rosa, etc. Scattered Cycas on slopes and especially near the top. The rock is a volcanic breccia. Many herbs of various sorts in grass and between rocks.

(146) almost pure stands of Cycas on very rocky hills. Some Pipturus, Mallotus etc. apparently burned recently (dead bushes)

(147) Hill with mixed broad-leaf woods. - Ficus retusa, F. ~~[illegible]~~ virgata, Hibiscus tiliaceus. Macaranga, Pouteria, Pandanus Diospyros in second story. much Alocasia and Cycas

(148) strip of littoral forest, dominantly Hernandia, but on sea side mostly Pandanus, with Scaevola, Messerschmidia, Pouteria etc.
Mostly on a dune ridge 2-3 m. high, but here and there projections of undercut limestone

(149) Hills with scattering of bushes in grass and patches of almost pure Cycas on steeper more rocky places.

(150) Cliffs and bluffs on south side covered with thicket.
more level ground above grassy,

(151) pastured, in places with bunchy Imperata.

1956 Ryukyu Is.

Takamari, near
June 20 - end of Kabira Peninsula, back of Ishi-saki on knobs of volcanic rock

37635 ~~(Lab.)~~ Anisomeles indica (L.) O. Ktz.
3 thickets

4 36 Physalis peruviana L. vel aff.
among cycads in pasture

1 37 Euphorbia Chamaesyce [illegible] ([illegible]) Hara
grassy pasture

6 38 Agrimonia pilosa Ledeb.
in edge of patch of woods

2 39 Panicum Cyrtococcum patens (L.) A. Camus
in rocky pasture

4 40 (~~cucurb.~~) Melothria maderaspatana (L.) Cogn.
climbing on rocks

5 41 (~~grass~~) Brachiaria eruciformis (J. E. Smith) Griseb. det. A. Chase
in grassy pasture

2 42 Torilis? T. triradiata ?
among rocks in pasture

2 43 Hedyotis tenelliflora Bl.
among rocks in pasture

1 44 Leucas
among rocks

5 45 ~~Satureia~~ Clinopodium chinense O. Ktz.
among rocks

2 46 Evolvulus alsinoides L.
common among rocks

2 47 Gnaphalium japonicum? Thunb.
rare among rocks

same; inner edge of littoral forest

5 48 Antidesma pentandrum var. barbatum Merr.
rare at

Ishigaki Is.

20 m.
↓ 36 flowers pale greenish yellow

37 flowers white.

ok 38 ~~same~~ flowers yellow.

40 m. 39 Trailing; ~~[illegible]~~.
↓

42 flowers white.

43 flowers white.

80 m. 44 flowers white
↓
45 flowers rose-purple.

ok 46 flowers bluish,

ok

2-3 m.
48 shrub 2 m. tall; fruits green, pleasantly acid.

1956 Ryukyu Is.

June 20 - YCAT Compound
3 km. n.w. of Ishigaki City
weeds in disturbed open ground

37649 Cenchrus echinatus L.
2 common

2 50 Euphorbia hirta
common Chamaesyce hirta (L.) Millsp.

2 51 Cyperus rotundus L. ok J.H. Kern
small colonies

5 52 (~~acanth~~?) Justicia procumbens var. hirsuta yamam.
common

5 53 Solanum nigrum L.
common

1-2 m.

ok [illegible]

det. E.C. Leonard 52 flower lavender pink with 3-lobed ~~purple~~ mark in center of lip.

ok 53 erect, flowers white, ripe fruit black.

June 21 - ridge above Ozato west of Kara-dake

(152) (Photo 978-4) Forest on ridge of schist - the lowest parts of this are dense and tangled and scrubby, perhaps are secondary. (60-100 m.)

(153) The main part of the ridge is in a mixed forest that is dominantly Ficus of several species but has many Lauraceae Raphiolepis, Randia etc. Thick undergrowth of Arenga, Psychotria, Lasianthus, Alocasia, ~~etc~~ Lasiandra, Lauraceae, many ferns, lianes such as Flagellaria, etc. (100-150 m.)

(150-180 m.)
154 Upward along the ridge the Ficus becomes less dominant but still common. Diospyros becomes commoner, also Ardisia, and many other trees come in. A little Freycinetia and large aroid vine.
Some Elaeocarpus, Schefflera,

Lauraceae, thick undergrowth of Psychotria, Arenga, lauraceous shrubs and seedlings, many ferns and Centotheca on ground.

On next ridge (180-200 m.) the Ficus becomes less common, but still present. Diospyros, Ardisia, Lauraceae, Pouteria, Elaeocarpus, ~~Bischoffia~~ Styrax, Mallotus philippinensis some Garcinia. One Dendropanax seen, small. Some secondary species - e.g. Macaranga, Mallotus, Bischoffia, etc. probably the result of the intensive logging that is obvious here.

Ferns cover the ground under a loose shrub layer of Psychotria, Lasianthus, etc. Tectaria most abundant. Some Asplenium nidus in trees. Aroids climbing in trees - perhaps Epipremnum.

(200 m.)

(156) Here on a long more or less level ridge Quercus comes in in considerable numbers. Some Elaeocarpus,

(photo 950-110) Dendropanax, much Ardisia, Diospyros, many Lauraceae. Ferns abundant. Some Freycinetia.

On ridge the forest is about 10-12 (-15) m. tall, a few trees to 2.5-3 dm. mostly 10-20 cm., some larger Ficus.

Undergrowth rather thin - Psychotria, Antidesma, Lauraceae, many ferns.

June 21 -, Ntana Yama, ridge above Ozato, ~~west of Kanadake~~

in degraded, tangled forest, dominantly Ficus

37654 ~~Smilax~~ Heterosmilax japonica Kunth. det. T. Koyama 1959
5 occasional

5 55 Fagara cuspidata (Champ.) Engler (= Zanthoxylum cuspidatum Champ.)
Xanthoxylum
occasional

2 56 Tubocapsicum?
rare along trail

5 57 ~~Centotheca lappacea~~
common locally = Ichnanthus vicinus (F.M. Bailey) Merr.

3 58 Arenga tremula (Blanco) Becc.
common in undergrowth
A. engleri Becc. det H.E. Moore

100-150 m.

vine climbing in trees, fruit immature.

55 small tree, tangled in mass of vegetation, fruits green.

56 branched herb, 0.8 m. tall, fruit bright red, soft.

57 prostrate to ascending

ok 58 several stems from base inflorescence reaching about 2 m. high, leaves 3-4, stem ~~[illegible]~~ covered by sheathing leaf bases.

same – in mixed broad-leaf evergreen forest on broad ridge top.

4 37659 Flagellaria indica L.
common generally

2 60 Diospyros maritima Bl.
common generally

5 61 ~~Smilax~~ Heterosmilax japonica Kunth det. T. Koyama 1959
common

5 62 Citrus depressa Hayata
occasional in understory

5 63 (~~orchid~~) Calanthe fauriei Schl.
occasional, terrestrial

2 64 Camellia japonica (var. macrocarpa Masam.?)
occasional

5 65 Ficus ampelas Burm. f.
occasional

5 66 Ophiorrhiza liukiuensis Hayata
common locally

2 67 (orchid) Hetaeria oblongifolia Bl. det. L.A. Garay
rare, terrestrial,

5 68 Neolitsea [illegible] laurifolia DC.
occasional

3 69 ~~fern~~ Ctenitis subglandulosa (Hance) Ching
common

same – in montane forest, with much Quercus

5 70 Antidesma japonicum S. & Z.
common in undergrowth

5 71 Ficus retusa var. nitida (Thunb.) King
occasional

150–200 m.

ok 59 tangled vine climbing into tree-tops; fruit immature.

60 small tree, fruit dull brownish orange

61 vine climbing in trees, fruit immature.

62 small tree 4 m. tall, fruits immature, aromatic.

63 in small clumps, flowers white

64 small tree; fruit immature.

65 large spreading tree with single, somewhat buttressed trunk
no aerial roots; yellow fruit.

66 suffrutescent, 4 dm. tall, flowers white.

67 stems twisting, flowers minute, bronzed.

68 small tree; fruit immature

200–279 m.

70 shrub 1 m. tall, fruit immature

71 large spreading tree with complex trunk

1954

37672 Ardisia quinquegona Bl. ~~[illegible]~~
3 common

4 73 Vittaria elongata Swartz
epiphytic

5 74 Nephrolepis bisserata (Swart) Schott
epiphytic, ~~fronds pendent~~

6 75 Ardisia sieboldii Miq.
common

June 22 - ~~[illegible]~~ Bannadake

(157) (Photo 940-10) n.w. base. Pine wood. fairly good stand on gently sloping terrace - trees up to 20 m tall and 2-3 dm. dbh. spaced 3-5 m.
Very few shrubs beneath, sparse stand of Miscanthus some Paspalum conjugatum with Elephantopus mollis. Has been somewhat pastured.

(158) On lower slopes a tangled scrubby mass of Mallotus ~~glabra~~ Wendlandia, Schima and other secondary shrubs with Miscanthus.
A little pine and Acacia.

shrub 2 m. tall

74 fronds pendent

75 small tree 4 m. tall, branches disarticulating.

(159) upper slopes and summit are covered by a low scrubby very dense wood of trees 3-5 m. tall mostly things such as Quercus, Ilex, ~~Distylium~~ Itea, Elaeocarpus, ~~Ilex~~ etc. with rather small coriaceous leaves.

(160) On the inner side of the rather U shaped series of ridges larger trees seem more abundant on the mid-slopes and tree ferns are common in ravines.

On the main ridge the low forest is very dense, 4-5 m. tall. Quercus is common, also Camellia, Ardisia, "tabu", Trema, Mallotus, Macaranga, Diospyros, Dendropanax, Ilex, Ficus 3 spp. Rhus, Wendlandia, Phyllanthus, Eugenia, Psychotria, Cinnamomum, Euscaphia, Antidesma, Styrax, Sarcandra.

The stems are mostly 2-5 cm. d.b.h. a few much larger, these mostly quercus. The spacing is mostly 0.5-1 m.

On the ground are scattered ferns (Polystichum) etc., tufts of sedge (Scleria?) and ~~Curcuma~~ Alpinia.

Some Freycinetia in saddle. also much Colysis.

Yamagi, brown with 2 dark bands! on Ardisia.

Contour trail around to east from beyond saddle - on steeper slopes the vegetation does not differ much from on ridge, except that stature may be a little greater and ferns (Colysis) locally more abundant.

This trail leads around to what almost amounts to a terrace - an area of very gentle slope. Here the trees are taller, up to 10 or more m. and more widely spaced. Composition does not differ conspicuously. More Ficus here but not dominant. Quercus still common. Ferns common but not abundant.

Another trail from bottom of saddle around to west and south through essentially similar vegetation to that on ridge, on steep slope. Down somewhat the stature is some higher. Arenga more common.

Two yamagi seen on Smilax. These were lighter brown than usual and decorated with 2 rows of yellow and black points. The two transverse ~~rows~~ of bands of black hair on anterior are hidden when animal is quiet, exserted when excited. Crawled off smilax onto trunk of Cinnamomum doederlinii.

Koya yama
June 22 - Pass west of Banna-dake
in low coppice-like wood

37676 Dianella ensifolia (L.) DC.
5 common on walls of road-cut on ~~schist~~ weathered schist.
5 77 Stephania japonica (Thunb.) Miers
edge of wood
6 78 Bridelia ovata Decaisne
occasional
6 79 Vaccinium wrightii A. Gray
occasional
6 80 Alnus formosana (Burkill) Makino
common, especially in low or moist spots
5 81 Vitex trifolia L.
on wall of road cut

In Pass, on west side, is a coppice-like growth of Quercus, Ternstroemia, Schima, Alnus, Myrsine(?), Lauraceae etc. about 3-4 m. tall, all apparently clumps of stump sprouts.

50 m.

Ok. flowers light blue, ripe fruit bluish purple.

77 vine twining in trees; fruit red.
78 small tree 4 m. tall, fruit green.
79 slender shrub 2.5 m. tall; fruit immature
80 small tree

Ok. shrub 1 m. tall
flowers deep lavender to violet.

178 1954 Ryukyu Is

Tsukuratsaki,
~~39~~ June 22 – s. w. base of
Bana-dake

37682 Jussiaea suffruticosa L.
5 roadside

Muibaga,
June 22 – s. w. ridge
of Banna-dake
roadsides in scrubby
woods.

5 83 Scleria terrestris (L.) Fawcett
common in deep grass

8 84 Smilax sebeana Miq. det T. Koyama 1959
occasional

6 85 [illegible]
occasional in pine woods

86 Glochidion
common

Taramani,
June 22 –, Banna-dake,
in ~~[illegible]~~ scrubby woods near
summit

2 87 Machilus thunbergii S. & Z.
rare ~~in~~

5 88 Ficus erecta var. beecheyana (H. & A.) King
occasional

5 89 Osmanthus bracteatus Matsum.
occasional

5 90 Osmanthus bracteatus Matsum.
occasional

179

Fosberg 37685 is
Daphniphyllum glaucescens
ssp. teijsmannii (Zoll.)
Huang

Det. E. H. Walker

Det. E. [illegible]

You might want to
record this
in your
notebook.
I haven't determined the var. yet

b

m. lvs

uit

ably

k green.

ish

white

You might want to record this in your notebook.

Fosberg 37685 is Daphniphyllum glaucescens ssp. teijsmannii (Zoll.) Huang

Det. E. H. Walker

Det. E. H.

I haven't determined the var. yet

0

Ch'ien, Ch'ung-shu; Wu, Chêng-i; and Ch'ên, Ch'ang-t'u.

1956 The vegetation types of China. Act. Geogr. Sin. 22: 37-92.

In Chinese, with English summary; describes 12 forest, steppe, meadow and desert types.

1956 Ryukyu Is

Tsukuratsaki,
June 22 - s. w. base of
Bana-dake

37682 Jussiaea suffruticosa L.
5 roadside

Muibaga,
June 22 - s. w. ridge
of Banna-dake
roadsides in scrubby
woods.

5 83 Scleria terrestris (L.) Fawcett
common in deep grass

8 84 Smilax sebeana Miq. det T. Koyama 1959
occasional

6 85
occasional in pine woods

86 Glochidion
common

Taramani,
June 22 - Banna-dake,
in scrubby woods near
summit

2 87 Machilus thunbergii S. & Z.
rare

5 88 Ficus erecta var. beecheyana (H. & A.) King
occasional

5 89 Osmanthus bracteatus Matsum.
occasional

5 90 Osmanthus bracteatus Matsum.
occasional

80 m.

Much branched herb
1.5 m. tall, petals
yellow, emarginate, 1 cm. lo

180 m.

84 forming tangle; fruit
yellow-green, probably
nearly mature.

85 small tree, fruit
immature.

86 shrub 3 m. tall;
flowers yellow.

220 m.

87 shrub 2 m. tall
inflorescence red, fruit dark green.

88 shrub 2 m. tall,
figs greenish.

89 small tree, flowers
pale yellowish green.
fragrant with a sourish
sweet odor.

90 small tree; flowers
white

1956 Ryukyu Is.

37691 Ilex warburgii Loes.
5 occasional
1 92 ~~Pavetta~~?
rare Tarenna
2 93 Morinda umbellata L.
rare
5 94 Ilex maximowicziana Loes., cf. aff.
occasional
6 95 Bridelia ovata Decaisne
rare
6 96 Premna obtusifolia R. Br.
occasional

June 22 - north. ridge
of ~~Banna-dake~~ Taramani
in low scrubby dense moist
forest
6 97 Ardisia
common
98 Rhus succedanea L.
common

small tree, fruit immature.
92 shrub; buds white.
OK 93 vine, climbing in trees.
94 small tree; fruit
immature.
95 small tree; fruit
immature.
OK 96 small tree, aromatic
when broken; flowers
pale green.

200 m.

slender shrub 2 m.
tall; fruit immature.
OK small tree, leaves
tending to turn red;
fruit green.

1956 Ryukyu Is

June 23 - mase. dake ~~steep slope~~,
steep slope (45° ±) of chert
(161) covered by a mixture
of grass and low brush.
(photo 940-7 for #161-167)
The grass is a mixture
of Imperata, small
Andropogon (?), Paspalum,
etc. Sporobolus elongatus,
Bushes are
a Osbeckia o Psidium
o Rhodomyrtus o Symplocos
f, c Eurya 2 spp.
c Ficus 3 spp.
la-, c Pinus (seedlings)
o Glochidion
o Mallotus
much la Nephrolepis exaltata
c Dianella ensifolia
f Elephantopus mollis
f Eupatraium sp.
f., la Lygodium
some c Rubus (small sp.)
r Bidens pilosa
r Commelina
r Adiantum sp
c la Thelypteris sp.
r Wahlenbergia
r Fimbristylis
r Emilia sonchifolia
c Melast. or Lythr.
o Lespedeza cuneata

Some colonies of Gleichenia
linearis on steep places.

Toward the top of the
ridge Symplocos
(162) becomes abundant and
very near the top Vaccinium
appears in some number
Thelypteris is very
abundant at the top,
some Andropogon, much
Eupatorium.
Miscanthus is scattered
on top, especially in
edges of brush.

The east slope is
densely brush-covered,
(163) the brush coming up
to a sharp line at the
crest. A few larger
pines on the ~~se~~ crest, many
saplings locally.

The scrub on the north
slope is mixed in composition:

Raphiolepis
Eurya
Vaccinium
Mallotus
Symplocos
~~Distylium~~ Itea
Celast.
Dendropanax

Eugenia
Pittosporum
Randia
Ardisia
Ilex
Ficus 2 spp.
Psychotria
Wendlandia

This scrub is a dwarf forest about 3-4 m. tall, of erect slender stems mostly under 1 cm. thick, some larger, mostly in clumps as though groups of stump sprouts. A very few shrubs — Psychotria. Sparse ground cover of ferns (Polystichum, Pteris etc.) and seedlings. Small Asplenium nidus on chert boulders.

Some vines — asclepiads, Smilax.

Scattered tufts of a broad leafed grass, sterile.

(164) Slopes below summit on north west side are thickly covered by a mixture of Miscanthus and such shrubs as Eurya, Rhus, Ilex, Symplocos, Psidium and seedling pines, with a few scattered larger pines. Much Smilax and several other vines.

(165) Pandanus in tangled scrub ~~in~~ shallow ravine on west slope almost to top of ridge at saddle.

(166) At the foot of the hill is a band of dense Acacia confusa with chinks filled by Miscanthus. Very little undergrowth or ground cover, but some Smilax vines.

(167) Below this, on flattish ground, just above the paddy fields is a solid stand of Paspalum conjugatum.

This scrub is a dwarf forest, about 3-4 m. tall, of erect slender stems (mostly under 4 cm. thick some larger, mostly in clumps as though bunches of stump sprouts. ~~Almost~~ Ground layer very sparse - scattered ferns (Polystichum, etc.) and seedlings.

June 23 - Mashi Take, summit ridge

in open brush and grass

37699 Canavalia microcarpa
2 rare, climbing in bushes

37700 Aeginetia indica L.
1 rare on open bits of soil

2 01 Hypericum japonicum Thunb.
very local in thin place in grass.

2 02 (~~sub.~~) Fagara nitida Roxb. (= Zanthoxylum nitidum)
common locally

2 03 (~~grass~~) Sacciolepis indica (L.) Chase
occasional

~~04~~

135 m

vine; flowers rose pink, pods ~~somewhat~~ inflated.

o/c 700 leafless, from mass of fleshy roots on the bottom of a thickened stem or corm; stem ~~bronze~~ and spathe bronze, striped with purple corolla white, slightly purplish toward base, lobes deep purple.

01 erect, flowers orange-yellow.

02 scandent shrub; fruits somewhat immature, aromatic when crushed.

det. A. Chase

1956 Ryukyu Is.

June 23 - same - in edges of dwarf forest

37704 ~~(asclep.)~~ Anodendron affine (H. & A.) Druce
5 climbing in trees

5 05 Euonymus tanakae Maxim.
common

v 06 ~~Randia [illegible]~~ Tarenna
rare

5 07 ~~Vincetoxicum~~ Cynanchum liukiuense Warb.
common, climbing in trees

June 23 - Mashi-atake, south slopes

5 08 Mussaenda parviflora Miq.?
in Acacia thicket

c 09 Rhodomyrtus tomentosa
occasional on slope

5 10 Eupatorium formosanum var. quasitripartitum (Hay.)
common
quasitripart?

180 m.

woody vine.

05 shrub 2 m. tall; fruit immature.

06 shrub 1.5 m. tall, flowers white.

07 vine; petals maroon, bronze in center of lobes, corona white.

100 m. 08 scandent shrub, twining in shrubs, flowers yellow; fruit immature.

140 m 09 shrub 1 m. tall

150 m. 10 erect suffrutescent herb; flowers pale lavender, honey-scented.
Kitam.

May 24.

Schist outcrops in Imperata pasture -
Andropogon 2 spp.
Lilium longiflorum
Lespedeza cuneata
Borreria
Oxalis corniculata
Setaria
Wahlenbergia
Artemisia
Rubus
Lygodium
Lactuca
Psidium
Centella
Phaseolus
Uraria
Gynura
Cyperus 2 spp.
Panicum
Fimbristylis.
Imperata
Emilia sonchifolia
Ficus erecta
Ficus retusa
Morus
Carmona

May 24 - Tozata

patches of Eocene and post Miocene limestone covered by a bushy forest of Pipturus, Ficus Macaranga, Clerodendum, Melia, Murraya, with Alocasia around edges.

Cultivated patches of beach deposit soil (Shioya?) - sugar cane, sweet potatoes, sesame, etc.

1956 Ryukyu Is.

back of Hoshino.

June 24 - Tozato Dist.

37711 Sesamum indicum L.
5 cultivated on limestone soil
6 12 Pipturus arborescens (Link) C.B. Rob.
important part of vegetation on limestone

5 13 Pipturus arborescens (Link) C.B.Rob.
important part of vegetation on limestone
5 14 Boehmeria ~~nivea~~ B. nipononivea var. concolor (Makino) Nakai
on rough limestone
5 15 Amaranthus gracilis Desv.
weed in edges of cultivated fields.

~~Mor~~
June 24 - 2 km 25° w. of n. of mouth of Todoroki-gawa in small desiccating fallow rice field
5 16 Fimbristylis dichotoma (L.) Vahl
common
5 17 Cyperus haspan L. ok J.H.Kern "correct spelling halpan I think"
common Lindernia cordifolia (Colsm.) Merr.
2 18 ~~Limnophila antipoda~~?
180 occasional L. angustifolia (Benth.) Wettst.
19 Hypericum japonicum Thunb. (= Sarothra japonica (Thunb.) Y. Kimura)
common

.

(over)

---

40 m.

ok erect, flowers white, turning faintly lavender.
ok — shrub 3 m. tall, flowers green, fruit with white fleshy receptacle, nutlets borne in pits, not adnate to receptacle.

ok — shrub

14 ~~[illegible]~~ bush 1.5 m. tall, sprawling.

50 m.
↓
Morigama Dist.

ok J.H.Kern

17 caespitose, stems soft, light green.

erect, flowers deep yellow

June 24 – same –
on schist exposures in
grassy pasture

37720 Andropogon Cymbopogon (Pilger) C.
4 occasional

2 21 Scleria levis Retz. (= S. hebecarpa Nees)
rare

2 22 Fimbristylis dichotoma (L.) Vahl
rare

1 23 Euphorbia Chamaesyce parvamaequalis (Holmes) Hara
occasional

2 24 Mitrasacme nudicaulis Reinw.
occasional

1 25 ~~Borreria~~ Hedyotis pauciflora Bl.
rare

2 26 ~~Panicum~~ Brachiaria eruciformis (J. E. Smith) Griseb. det. A. Chase
common

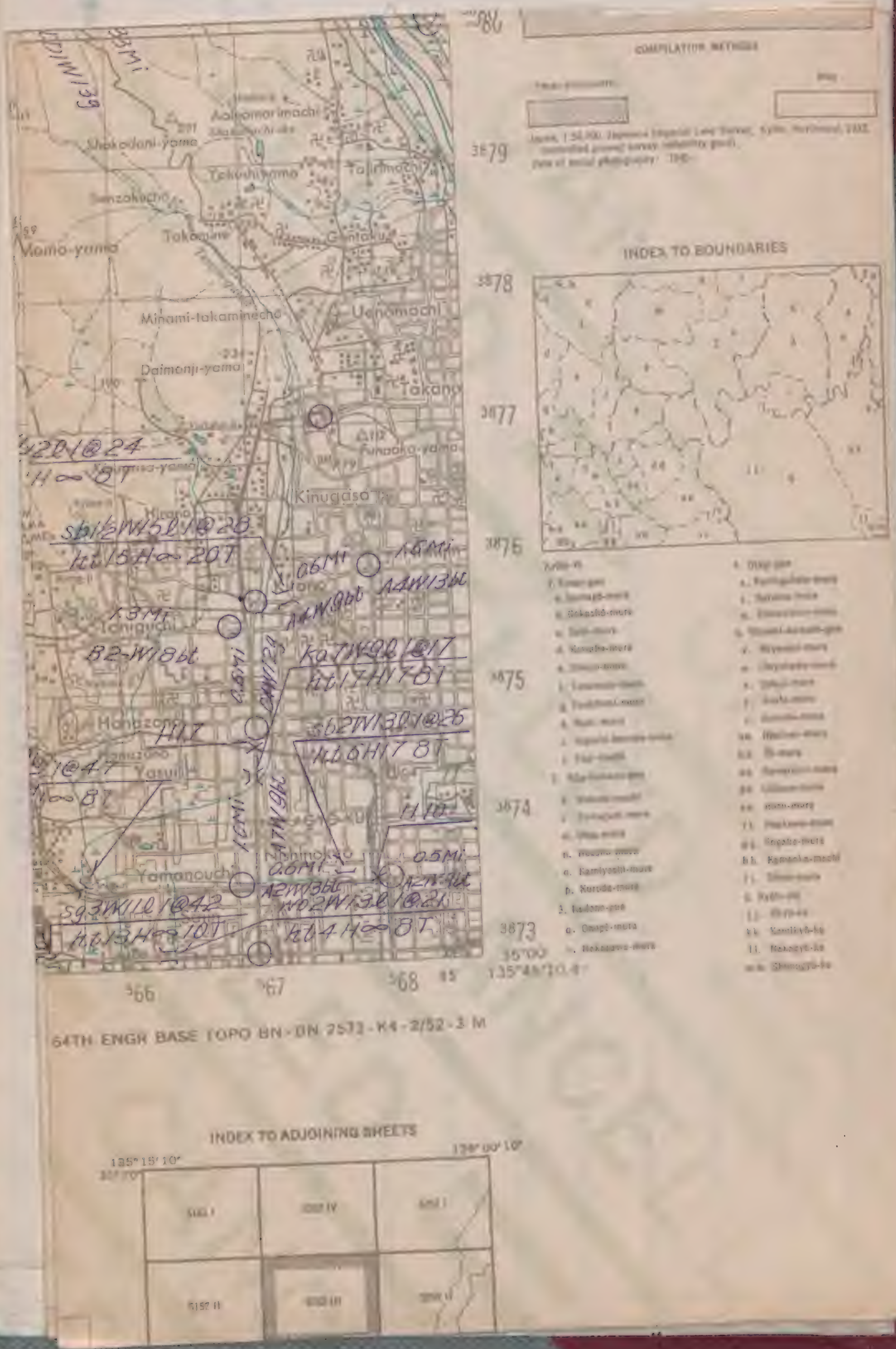
50m.
↓

det. A. Chase
fertilis (Steud.) A. Camus, but very uncertain. Inflorescences few, abnormal.

23 erect, flowers white.

24 flowers white

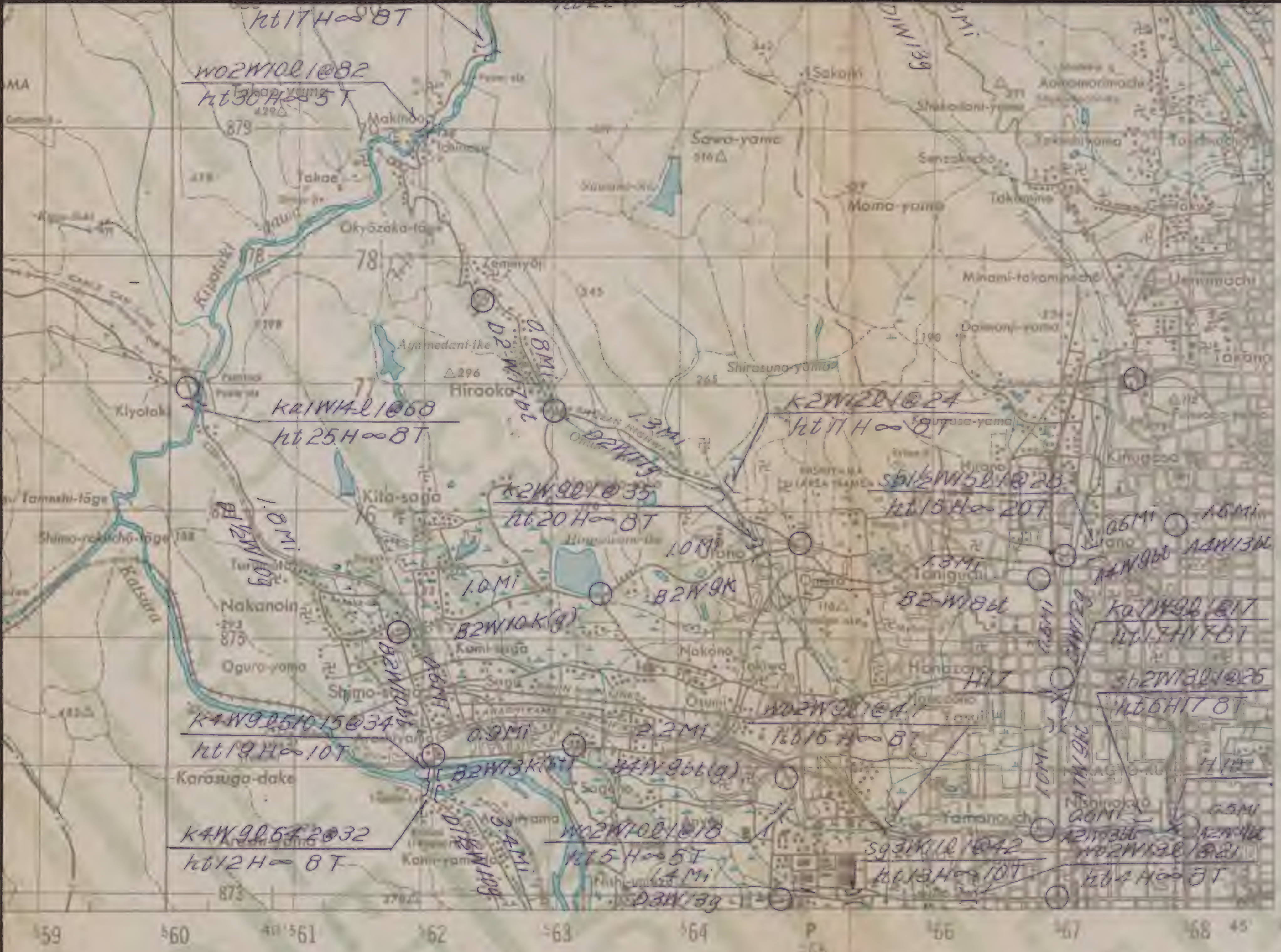
50m.


COMPILATION METHODS
INDEX TO BOUNDARIES
Aokomorimachi
Shokodani-yama
Tokushima
Tajimachi
Senzokucho
Momo-yama
Takamine
Gentaku
Minami-takaminecho
Uenomachi
Daimonji-yama
Takano
Funaoka-yama
Kinugasa
Tanigucho
Hanazono
Yasui
Yamanouchi
Nishinokyo
3879
3878
3877
3876
3875
3874
3873
566
567
568
35°00'
135°45'10.4"
.6Mi
1.5Mi
1.3Mi
.8Mi
1.0Mi
.05Mi
.05Mi

64TH ENGR BASE TOPO BN-BN 2573-K4-2/52-3 M

INDEX TO ADJOINING SHEETS

COMPILATION METHODS



ht17H∞8T
wo2W10l1@82
ht30H∞5T
Takao-yama
Makino
Takae
Okyōzaka-tōge
Zenmyōji
Kiyotaki-gawa
Katsura
Agamedani-ike
Hiraoka
Kiyotaki
ka1W14l1@68
ht25H∞8T
D2-W17bt
0.8Mi
1.3Mi
D2W11g
Tamashi-tōge
Shimo-rokuchō-tōge
Kita-saga
1.8Mi
D1/2W10g
Nakanoin
Oguro-yama
Shimo-saga
B2W10bt
0.6Mi
k2W9l1@35
ht20H∞8T
1.0Mi
B2W10K(g)
Kami-saga
Saga
K4W9l25K15@34
ht19H∞10T
0.9Mi
B2W13K(bt)
Karasuga-dake
K4W9l64-2@32
ht12H∞8T
D1/2W10g
3.4Mi
Kami-yama
wo2W10l1@18
ht5H∞5T
1.4Mi
D3W13g
Sawa-yama
Sakai
D1W13g
3Mi
Aomorimachi
Shakadani-yama
Senzakichō
Momo-yama
Takamine
Minami-takaminechō
Uenomachi
Daimonji-yama
Takano
Shirasuna-yama
k2W12l1@24
ht11H∞8T
Kinugasa-yama
Kinugasa
Hirano
Sb1/2W15l1@28
ht15H∞20T
0.6Mi
1.6Mi
A4W9bt
A4W13bt
1.0Mi
B2W9K
1.3Mi
Taniguchi
B2-W18bt
0.6Mi
B2W12g
ka7W9l1@17
ht17H17 8T
Hanazono
H17
Sb2W13l1@26
ht6H17 8T
Nakano
Tokiwa
Ōsumi
wo2W9l1@47
ht16H∞8T
2.2Mi
A4W9bt(g)
Sagano
1.0Mi
A1W12g
UKYŌ-KU
H18
Nishinokyō
Yamanouchi
0.6Mi
0.5Mi
A2W13bt
A2W4bt
Sg3W11l1@42
ht13H∞10T
wo2W13l1@21
ht4H∞8T
³79
³78
³77
³76
³75
³74
³73
35°00'
⁵59
⁵60
40' ⁵61
⁵62
⁵63
⁵64
P
⁵65
⁵66
⁵67
⁵68
45'
135°45'10.4"

64TH ENGR BASE TOPO BN-BN 2573-K4-3/52-3 M

INDEX TO BOUNDARIES

2 3 Miles

4000 Meters

4000 Yards

CONTOURS

TER UNIVERSAL

EL SPHEROID

INDEX TO ADJOINING SHEETS

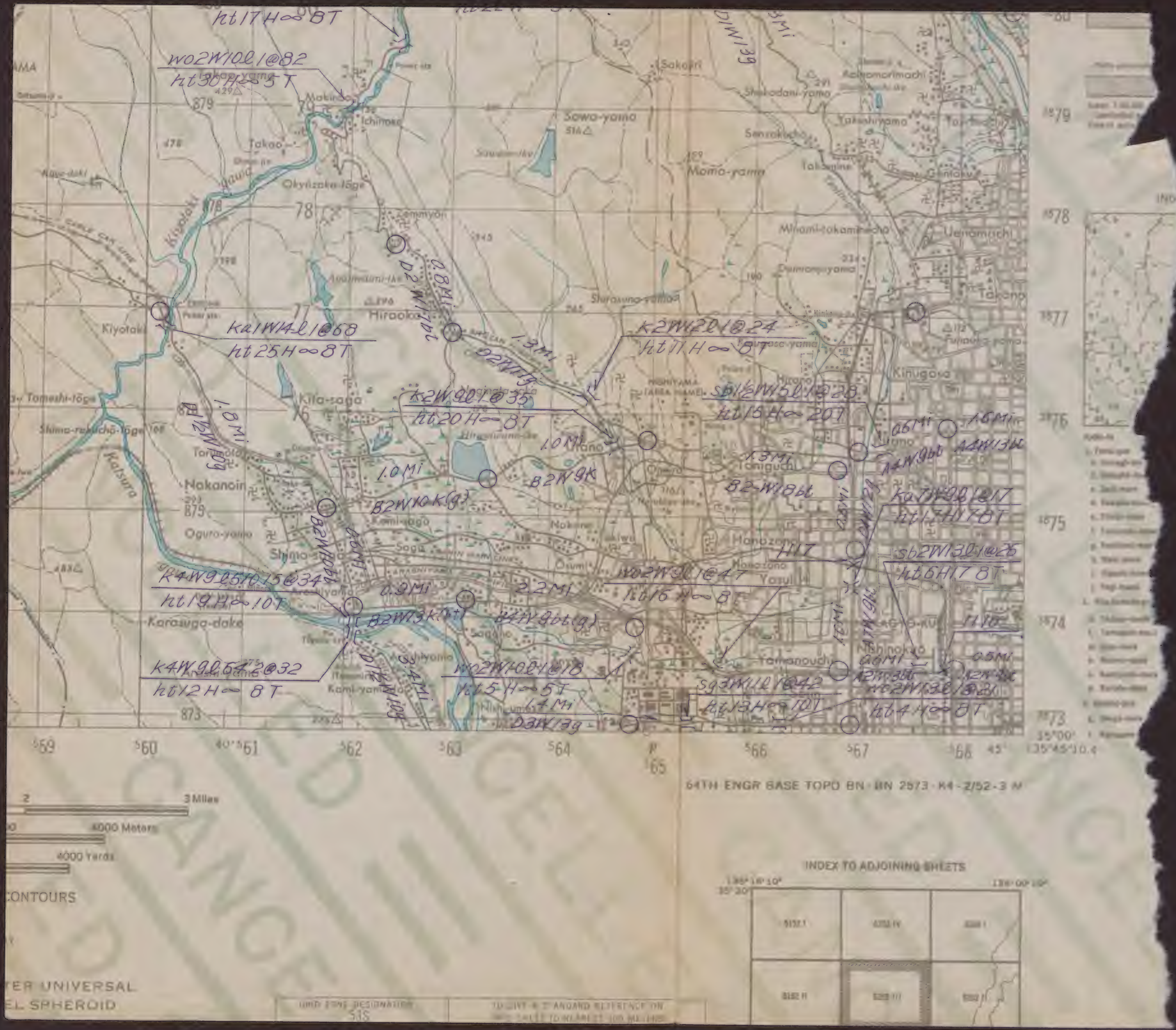
GRID ZONE DESIGNATION

53S

28 June 1956. AM

Eocene Limestone:

Mallotus moluccanus, Ficus erecta, F. superba var. japonica, F. "ribedfruit"; Alocasia cucullata; Smilax sp.; Morus australis, Garcinia spicata; Bischofia javanica; Stictocardia tiliaefolia; Macaranga tanarius; Mallotus molucannus, Broussonetia papyrifera; Rhus succedenae; Ardisia sieboldii; Microlepia sp, Arenga engleri, Fagaria indica(?), Diospyros maritima; Smilax; Murraya paniculata, Peperomia sp. Rhaphidophora liukiuensis, Premna obtusifolia, Hernandia peltata, Ehrita thyrisiflora; Asplenium nidus; Pittosporum tobira; Callicarpa japonica; Hoya carnosa;


ht17H∞8T
wo2W10l1@82
ht30H∞5T
Takao-yama
Makino
Ichihara
Takao
Kiyotaki
Okyuzaka-toge
Zemmyoji
Sawa-yama
Sakairi
Shokodani-yama
Momo-yama
Takamine
Senzokucho
Yakushiyama
Minami-takamine-cho
Uenomachi
Takano
Dainomon-yama
Shirasuna-yama
Hiraoka
Kiyotaki
ka1W14l1@68
ht25H∞8T
0.8Mi
D2W17bt
1.3Mi
D2W11g
k2W12l1@24
ht11H∞8T
Funaoka-yama
Kinugasa
Kita-saga
k2W9l1@35
ht20H∞8T
sb1/2W5l1@28
ht15H∞20T
1.8Mi
D1/2W10g
Tomeshi-toge
Shimo-rokucho-toge
Tamimoto
Katsura
Nakanoin
1.0Mi
B2W10K(g)
1.0Mi
B2W9K
Utano
1.3Mi
Taniguchi
B2-W18bt
0.6Mi
A4W9bt
1.6Mi
A4W13bt
ka7W9l1@17
ht17H17 8T
Kami-saga
Oguro-yama
Shimo-saga
B2W10bt
0.6Mi
Saga
Hanazono
H17
sb2W13l1@25
ht6H17 8T
wo2W9l1@47
ht16H∞8T
Yasui
k4W9l25l0l5@34
ht19H∞10T
Arashiyama
0.9Mi
2.2Mi
B2W13K(bt)
B4W9bt(g)
Karasugo-dake
Sagano
KAMIGYO-KU
1.2Mi
Nishinokyo
0.6Mi
A2W3bt
0.5Mi
A2W3bt
1.1Mi
A7W12g
A7W19bt
0.5Mi
k4W9l54l2@32
ht12H∞8T
D1/2W10g
3.4Mi
Arashiyama
wo2W10l1@18
ht5H∞5T
1.4Mi
D3W13g
Kami-yamada
Yamanouchi
sg3W11l1@42
ht13H∞10T
wo2W13l1@21
ht4H∞8T
559
560
561
562
563
564
565
566
567
568
879
878
877
876
875
874
873
35°00'
135°45'
64TH ENGR BASE TOPO BN · BN 2573 · K4 · 2/52 · 3 M
2
3 Miles
4000 Meters
4000 Yards
CONTOURS
TER UNIVERSAL
EL SPHEROID
GRID ZONE DESIGNATION
53S
INDEX TO ADJOINING SHEETS
5152 I
5252 IV
5252 I
5152 II
5252 III
5252 II
CANCELLED

28 June 1956 Afternoon.

Eocene Limestone:

Mallotus paniculatus; M. moluccanus;
Pisonia umbellifera; Ficus erecta; F. superba var. japonica;
F. retusa var. bitida; F. "ribed fruit"; Smilax sp.;
Alocasia cucullata; Colocasia sp.; Monsteria deliciosa;
Diospyros morrisiana; D. japonica; Hoya carnosa;
Arenga engleri; Pteris sp.; Asplenium sp.; Asplenium
nidus (Neottopteris nidus); Nephrolepis cordifolia;
Lygodium scandens var. microphyllum; L. flexuosum;
Piper sp., Peperomia japonica; Fagaria indica (?);
Pittosporum tobira; Psychotria serpens; Glycosmis pentaphylla;
Tayrattia japonica (not in Flora Okinawa), Callicarpa japonica;
Zanthoxylum arnottianum; Toddalia asiatica;
Murraya paniculata, Fraxinus griffithii; Breynia rhamnoides;
Sapium sp; Phyllanthus sp.; Morus australis, Hibiscus
tiliaceus, Boemaria sp.; Rhus succedenae, Carmona retusa;
Pueraria tonkinensis; Quercus miyagii; Cudrania cochinchinensis

Callicarpa dichotoma (Lour.) K. Koch
38552

C. iriomotensis Masam. 37191,
37289

C. japonica Thunb.
38407, 38315, 38546, 38180.

C. japonica var. luxurians Rehd.
37869, 38067, 38298,
37763, 37857, 37066

det Moldenke

H.N.

Determinations by E. H. Walker,
Book 45

okinawa make slips

(4) 37028 Securinega flueggeoides M.-A.
37160 Sarcandra glabra (Thunb.) Nakai
37192 Gymonosphaera podophylla (Hook.) Copel. det C. V. Morton
~~372~~
37211 Castanopsis cuspidata (Thunb.) Schott
37225 S~~C~~arcandra glabra (Thunb.) Nakai
37256 Alchornea trewioides M.-A. (var. formosana Pax?) (not Mallotus as previousl
reported).

okinawa annotate

(1) ← 36976 Spiranthes stylitis Zoll.
"(1) ← " 36994 Tarenna gyokushinkwa Ohwi (not Randia cochinchinensis)
37011 Smilax (Heterosmilax?)
37019 Canavalia sp.

37170 Spathoglottis plicata Bl.
37239 Calanthe fauriei Schl.
~~37285 Stereosandra javanica Bl. det. L. A. Garay~~

add on labels 36990 Lygodium microstachyum var. glabrescens Nakai
make slips (3) 37071 " "
37148 Ficus benguetensis Merr.
37214 Elaeocarpus sylvestris var. ellipticus (Thunb.) Hara

38050 Neolitsea ohbana Koidz. det. C. K. Allen

37822a Eleocharis ochrostachys Steud. det. H. K. Svenson